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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 24 1951

THE HISTORY AND DEVELOPMENT OF FORENSIC MEDICINE*

BY

Sir SYDNEY SMITH, C.B.E., M.D., F.R.C.P., D.P.H.

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Forensic medicine may be defined briefly as consisting essentially of that body of medical and paramedical scientific knowledge which may be used for the purposes of administration of the Law. In discussing its history it is obviously impossible to indicate any single date as the point at which forensic medicine emerged as a recognizable, separate scientific discipline. It is justifiable, no doubt, to contend that Medicine originated in the very dawn of human history, when first a cry of pain prompted a fellow-being to experiment with simple forms of assuagement. Similarly, the Law may be said to have its origins in the earliest sanctions which were doubtless applied to disturbers of the peace in the most primitive communities. We cannot begin to think of forensic medicine as an entity, however, until a stage of civilization is reached in which we have, on the one hand, a recognizable legal system, and on the other an integrated body of medical knowledge and opinion. Furthermore, we cannot know much about such matters until some means of recording them has been achieved, and our earliest records take us back only about five thousand years.

Egyptian Law and Medicine

We must turn, therefore, to the records of the early literate civilizations of the Near East, particularly to those of the Nile Valley, where, from the ancient Egyptian inscriptions on stone and later on papyri, we can obtain some idea of the state of knowledge at that early period. I believe there is some evidence that Menes, the first Pharaoh, had a considerable knowledge of medicinal plants, and it is quite certain that at a somewhat later period there was a knowledge of medicine which was not only extensive but also clearly systematized and showed a much more scientific approach to medical problems than is generally realized. This much can be gleaned from the now fairly numerous medical papyri which have been translated. These include the Ebers (medical), Edwin Smith (surgical), and Hearst Papyri, and a few others which are rather more fragmentary, such as the medical papyri in the British Museum. From these, from illustrative inscriptions, and from actual mummified remains, it is possible to draw many valid conclusions regarding Egyptian law and medicine from as early as 2500 B.C. onwards. There was a definite system of law, relating not only to crime but also to property, marriage, and other civil matters. The punishments for crime were rough and ready, consisting often of strokes with a cane or a lash, sometimes of more elaborate forms of torture or of mutilation, such as cutting off the ears, nose, hands, or feet. Not uncommonly, the convicted person was thrown to the crocodiles of the Nile, but the most frequent punishment of all, at least during certain eras, was to put the culprit to forced labour for long periods—hence the Pyramids.

So far as medicine is concerned, along with much that lies in the domain of magic and sorcery there is a surprising amount of sound medical and surgical knowledge. Of more consequence, so far as we are concerned here, is the evidence that the practice of medicine was subject to legal restrictions. The right to practise was restricted to members of a certain class, and intending physicians had to study the precepts laid down by their predecessors in certain ancient books. There were specialists in all branches of medicine and surgery, and physicians were specially interested in conditions affecting the head, the teeth, the eyes, the intestines, etc. A number of doctors specialized in diseases of women and children, and there is a note of a title "Keeper of the Anus"—surely a very narrow specialty. Salaries were paid by the Egyptian Treasury; in fact, we see there the first State medical service. There is indicated in the Edwin Smith Papyrus a considerable knowledge of practical anatomy such as was unknown for many centuries to the physicians of other races and nations because of religious and other prejudices against the dissection of the dead body.

Knowledge of drugs, including poisons such as arsenic, mercury, and copper among the metals, and hyoscine, coniine, and other vegetable poisons, was considerable. It may be recalled that Homer speaks of the wealth of such knowledge which had been derived by the Greeks from the Egyptians, Homer was writing his two best-sellers about three thousand years ago, so that we may be sure that the Egyptians' knowledge was of much more ancient date.

The First Medico-legal Expert

This was the state of affairs by the time that the papyri were written, but there is little doubt that the regulations developed gradually over a long period, and were possibly derived from the precepts of Imhotep and his followers, about 3000 B.C. Imhotep was the Grand Vizier, Chief Justice, and Physician to King Zozer, and as a side-line he was also architect of the

*Being an address given to the Osler Club on December 1, 1950.

first great Pyramid at Sakkara. He was the first great man combining the sciences of law and medicine; he might, if you wish, be described as the first medico-legal expert. Unfortunately Imhotep became a god, and it is one of the weaknesses of Egyptian medicine that the methods of treatment became largely empirical and irrational through the influence of tradition, heavily overlaid with an aura of divinity and magic. Much of the witchcraft, magic, and sorcery is understandable, for it was not unreasonable to assume that ills of obscure origin might well be due to malignant demons inhabiting the body. Hence the devising of powerful charms, amulets, incantations, and so on—in some respects not unlike the bottle of medicine given so freely to-day. One result of this outlook, however, was that experiment and originality were not encouraged, and thus the distinction between good treatment and bad, between competence and malpraxis, became largely a question of whether or not the authoritative "canon" had been observed. If unsatisfactory results followed a course of treatment which departed from the orthodox, the consequent penalties might well be a serious matter for the physician. Indeed, he might be called upon to pay for his unorthodoxy with his life. There is little to indicate any particular medico-legal practice, but Pliny tells us that the bodies of those who died were examined to ascertain the cause of death, and we know that a fairly extensive knowledge of toxicology was required.

Medical Laws in Early Civilizations

From the records of other more or less contemporary civilizations we can glean information that is no less interesting. In Babylonia an equally rigid control was exercised over admission to the medical "profession," and a similarly authoritative code of practice had to be followed. The earliest record of a murder trial has recently been found in Central Babylonia, in Sumeria, on a clay tablet dating back to about 1850 B.C. Regarding the ancient Israelites, we know little or nothing about their medical men, if they existed as such. The well-known biblical quotation, "Honour a physician with the honour due to him . . . for the Lord hath created him," would suggest that they were not without influence; and there is another quotation, rather ambiguous in its terms—namely, "He that sinneth before his Maker, let him fall into the hand of the physician." It is of some significance to note that the ancient Jewish laws drew a distinction between mortal wounds and those which were not to be so regarded, and also prescribed the investigation to be made in cases of disputed virginity. It is hard to avoid the conclusion that the opinion of "physicians" had a place in the determination of such matters.

Much farther East, in India, at a correspondingly early date, the right to practise medicine was also restricted to the members of certain castes and a prescribed method of medical education was enforced. By law the minimum age for marriage for girls was laid down as 12 years; the duration of pregnancy was recognized as being between 9 and 12 lunar months, with an average of 10 months; and in these matters, and perhaps also in others, medical opinion was applied to the requirements of the law. Another feature of Hindu medicine of this period was that considerable importance was attached in medical education to a knowledge of poisons and antidotes, and to the means whereby various poisons could be differentiated.

Thus, although the knowledge which we have of these early times is fragmentary, and although it is insufficient to justify a claim that there was anywhere an established science of forensic medicine, we can say that wherever man succeeded in creating a "civilization" problems arose, and these were dealt with by means which we can recognize as forming at least the elementary bases of these subjects—medical education, admission to the medical profession, medical ethics, public health, forensic medicine proper, and toxicology—which ultimately fall within the province of what has been generally known as State medicine.

The Greek Legal Code

In all the civilizations to which reference has so far been made, a common feature was that the practice of medicine was associated with magic and priestcraft and divine traditions. To the Greek civilization we owe a great deal for placing medicine on a rational basis, largely due to the scientific outlook and methods of Hippocrates. Not only was there a great emancipation and development in medicine in ancient Greece, but there was also a remarkable development in the field of jurisprudence. The Greek Legal Code, especially as regards criminal procedure, was very full and elaborate. Though there is no clear evidence that medical knowledge was officially made use of in establishing proof in courts of law, Hippocrates and others discussed many medico-legal questions, such as the relative fatality of wounds in different parts of the body, the possibility of super-foetation, the average duration of pregnancy, the viability of children born before full term, malingering, and other matters which almost inevitably must have repeatedly been at issue in the courts. In view of the high standing enjoyed by the physicians of ancient Greece, it is hard to believe that their opinions were disregarded by a legal system which was equally anxious to maintain its place of high esteem. It is interesting to note that the ancient Hippocratic Oath included an undertaking not to administer poison or to advise on the use of poisons, nor to contribute to the procuring of abortion. Indeed, it is no exaggeration to say that the whole ethical outlook of the medical profession throughout the ages has been determined largely by the ethical teachings of Hippocrates more than two thousand years ago.

Roman Medical Legislation

Roman legislation was not notably more advanced than the Greek, upon which it was so largely based, but during the lifetime of the Roman Empire there was considerable progress in medicine. Galen, Celsus, and others, both Greek and Roman, continued the objective rational methods of the Greek physicians, and, if there is no reason to believe that the law made greater systematic use of the medical knowledge available, at all events the stage was coming nearer when objective factual medical findings could be of a standard admissible even under the strictest codes of evidence and procedure. Certain notable cases of medical evidence have frequently been quoted. For example, the body of Julius Caesar, assassinated in 44 B.C., was examined by a physician, who pronounced the opinion that of all the 23 wounds sustained, only one, penetrating the chest, was of a fatal nature.

Another much-quoted case was that of Germanicus, who died in the year A.D. 19, and whose death was

attributed by one side to poisoning and by the other side to heart disease, both on the grounds that *the heart did not burn*. Such an instance gives us an inkling, perhaps, of the reason why the courts did not make as much use of medical evidence as might have been expected. Other cases refer as always to the vexed problem of abnormal periods of gestation and their relation to legitimacy. Under the rule of Hadrian (A.D. 117–138), for example, several instances were recorded of births after unduly prolonged pregnancies being held legitimate in view of the opinions of ancient philosophers and physicians, who considered that no fixed maximum period of gestation could be stated with certainty. Across the intervening centuries we can still agree with the ancients on this particular point at least. It should be noted also that in the later Roman era the conception of urban public health measures strikes a note that is closely in harmony with a modern outlook—at least up to the point where public health was still public health and not social medicine.

So we come to the era of the decline and ultimate dissolution of the Roman Empire and its Byzantine postscript. Almost as if they were intended to be a lasting memorial to the fast-fading greatness of Rome, the Justinian enactments made their appearance between A.D. 529 and 564. Amongst many other things, the Justinian Code provided for the regulation of the practice of medicine, surgery, and midwifery; the proof of competence by means of examinations; the classes of physicians that were to be recognized; the limitation of the number of physicians in each town; and the penalties to be imposed for malpraxis. All this has an amazingly modern ring about it. The Justinian laws clearly recognized and defined an integrated medical profession, with required educational standards and standards of competency, in a way that had never previously been equalled. Moreover, the status and function of the medical expert in connexion with legal procedures are indicated more clearly than ever before—"*Medici non sunt proprie testes, sed majus est judicium quam testimonium*"—which may be freely translated to mean that the medical expert is not used to proper or greatest advantage if he is regarded simply as an ordinary witness, appearing *for* one side or *for* the other side; his function is rather to assist the judiciary by impartial interpretation and opinion, based on his specialized knowledge. This dictum holds true to-day and should never be forgotten.

It was in this sense that the Justinian Code enjoined the co-operation of medical experts in a considerable variety of legal problems—e.g., in the determination of the existence of pregnancy, in cases involving sterility or impotence or legitimacy, in cases of rape, in cases of poisoning, in cases involving the problem of survivorship, in cases which were complicated by the question of mental disease, and in other comparable circumstances. The Justinian enactments may be held to represent the highest point of achievement in the way of defined forensic medicine in the ancient world; elements of the Justinian Code were carried forward, and appear in many modern legal systems; and, indeed, nothing of comparable status is to be found until after the conclusion of the Dark and Middle Ages.

For the thousand years which followed the fall of the Roman Empire there was no real development in forensic medicine. Indeed, there was a general stagnation in the entire field of medicine and scientific thought generally. The methods based on observation and experiment fell largely into disuse, and practice was mainly determined by tradition. The influence of Galen and the spread of Christianity have been held to have retarded scientific progress, and there is no doubt that dogma and subservience to authority do have this tendency, though such has little to do with the simple faith of the people. In the field of law there was a corresponding deterioration which led to the absurd expedients of trial by ordeal and the widespread use of torture to extort confessions whereby decisions might be reached, apparently to the satisfaction of all, or nearly all, concerned. Probably there were areas of relative enlightenment, but, if so, their influence remained localized. The lights of progressive learning burned low throughout Europe, and there was no central authority comparable to Rome in its heyday which could set an example for others to follow in progressive legislation or medical progress. In such circumstances, therefore, it is not surprising that throughout this long era we search Europe in vain for any evidence of real progress in forensic medicine.

A Noteworthy Chinese Document

Perhaps things were rather better elsewhere. In China, for instance, there was compiled in the first half of the thirteenth century a noteworthy volume on the procedure to be followed in investigating deaths, especially those in suspicious or obviously criminal circumstances. This was entitled the *Hsi Yüan Lu*, literally the "washing away of wrongs," and has been aptly paraphrased as "Instructions to Coroners."* It was itself based on instructions given in books of still earlier date, and, with modifications introduced with the passage of time, it continued to be the authoritative code until fairly recent times.

I have not seen a translation of a really ancient copy of this book, but even from a comparatively modern edition (1843) one certainly gets the impression that there was a comprehensiveness in the scope of medico-legal procedure in ancient China that was not to be found in mediaeval Europe. The importance of a satisfactory examination of the wounds on a body is stressed, among other reasons, in order to check the validity of a confession or other statement. The sites where wounding is likely to prove mortal are indicated. The preparations necessary for the examination of a body are described, and the examiner is warned not to be deterred by the unpleasant state of the corpse, but to make a systematic examination from the head downwards in every case. The difficulties caused by decomposition are clearly recognized, and the examiner is advised on the subject of counterfeited wounds. Sections are devoted to wounds caused by different agencies, such as blows from the fist or kicking, by various types of weapon, etc., and to asphyxial deaths—e.g., by strangulation and drowning. The possibility of homicidal strangulation being passed off as suicide is discussed, also the means for distinguishing between the bodies of drowned persons and those thrown in after death. The possible confusion between ante-mortem and post-mortem burning is recognized, and poisoning is given considerable attention. The examiner is advised on the possible importance of examining the locus, and is warned that at an inquest nothing should be regarded as unimportant. In this connexion

*See article by Professor H. A. Giles: *Proc. R. Soc. Med.*, 1923–4, **17**, Sect. Hist. Med., 59.

an adage is quoted which might almost serve as a motto for our modern forensic scientists:

> "The difference of a hair will be
> The difference of a thousand *li*."

Altogether it is a remarkable document, and, although some of the methods and tests described are fantastic, there is no doubt that the real nature of the problems involved was clearly appreciated. As I have suggested, it is unfortunate that I cannot with certainty sort out the genuinely ancient from the more modern interpolations, but I am left with the conviction that in mediaeval times Chinese forensic medicine was far in advance of contemporary European practice. It would be of great interest if some student of Chinese history could unearth and translate an undoubted mediaeval text of *Hsi Yüan Lu*.

Early Germanic Codes

Reverting to the European scene, we can but remark that the possibilities inherent in the Justinian enactments, though never entirely lost, were so dissipated, distorted, ignored, or supplanted that no significant applications or developments fall to be recorded until we enter the sixteenth century. In 1507, under the auspices of the Bishop of Bamberg, a comprehensive and systematized penal code was published, which was soon adopted by a number of the neighbouring German States as well. Chief credit for the actual work involved appears to belong to John, Baron of Schwartzenberg, and, since we must really look on the Coda Bambergensis as the starting point for the science of forensic medicine as we understand it, it is but proper that the names of the two individuals mainly responsible should be recorded.

Within a very short space of time, in 1553, clearly based on and developed from the Bamberger Code, there appeared the still more important *Constitutio Criminalis Carolina*, or Caroline Code, published and proclaimed by the Emperor Charles V as the code of law which was henceforth to be observed throughout his extensive empire. In both these early Germanic codes it is for the first time clearly and definitely laid down that expert medical testimony *must* be obtained for the guidance of the judges in cases of murder, wounding, poisoning, hanging, drowning, infanticide, abortion, and in other circumstances involving the person.

The importance of the Caroline Code was soon reflected in legislative changes elsewhere, notably in France, and indeed throughout Europe there was a gradual stirring and awakening from the intellectual slumber in which she had lain for so long. It would be too much to say that belief in witchcraft waned so early or so suddenly, but there was a growing scepticism of the value of trial by ordeal and other mediaeval travesties. Physicians of the time played their part in the development of a saner, healthier outlook on such matters, for medicine, too, was struggling out of its state of relative stagnation.

Paré, Fideli, and Zacchia

In such favourable circumstances, therefore, it is not surprising that we find medical men of the period taking a new and lively interest in the application of their knowledge to the solution of legal problems. Published works on the subject began to appear in the second half of the sixteenth century, and pride of place should probably be given to Ambroise Paré, who in 1575 devoted one of his volumes to a discussion of monstrous births, simulated diseases, and the methods to be adopted in preparing medico-legal reports. The first medico-legal *magnum opus*, however, was by an Italian physician, Fortunato Fideli, and this also appeared before the end of the century, in 1602. It was entitled *De Relationibus Medicorum*, and ran to four books of considerable size. Although in many ways it reflected the authoritative doctrines and superstitions, ecclesiastical and otherwise, which prevailed at the time, the comparative modernity of its scope is remarkable, and one is struck by the consistent similarity of the problems which confront the law, no matter which century, or which country, or which legislative system is concerned.

Soon, however, the books of Fideli were overshadowed by a still more impressive work. This was by another Italian, Paul Zacchia, physician to the Pope, and one of the most eminent medical men in Europe at that time. Between the years 1621 and 1635 he published his monumental *Quaestiones Medico-Legales* in three large volumes. Of these, the first is of greatest interest, as it contains Zacchia's exposition of the existing state of knowledge and belief over the entire field of forensic medicine. In the second volume, a great variety of hypothetical questions are raised and discussed, while the third volume contains the authoritative decisions of the Roman Rota on problems of all sorts. An outline of the contents of the first volume is as follows: Book I: Age; Legitimacy; Pregnancy; Superfoetation and Moles; Death during Delivery; Resemblance of Children to their Parents. II: Dementia; Poisoning. III: Impotence; Feigned Diseases; the Plague and Contagion. IV: Miracles; Virginity; Rape. V: Fasting; Wounds; Mutilation; Salubrity of the Air.

The work has many shortcomings in common with that of Fideli, which could hardly be otherwise. Knowledge of anatomy and physiology was sketchy and erroneous; the inclusion of a section of miracles is in itself sufficiently revealing; and it is depressing to reflect that an acquaintance with the different methods of torture was of more than mere academic concern to the physicians of that period. But, taken all in all, it is a remarkable work, scholarly and well informed for its period, and it well deserved the high reputation and authority which it immediately attained and for long kept. This high reputation was not confined to the author's native country, but spread throughout Europe. But although these two Italian physicians, Fideli and Zacchia, thus early achieved such promise and distinction in the field, it must be remarked that the Italian pre-eminence was not maintained, and it is not until comparatively recent times that there has been any further contribution of note from their countrymen.

In France, the pioneer volume by Ambroise Paré was followed after a respectful interval by the more comprehensive works of Gendri (1650), de Blegny (1684), and Devereux of Paris (1693). Both there and elsewhere, active interest and careful observation were progressively adding to the value of medical evidence, and experimental methods were increasingly adopted. Under the influence of Vesalius, Fallopius, Eustachius, and others, the knowledge of anatomy increased greatly. Harvey (1628) proved the circulation of the blood, and there were other notable advances in physiology. It may be noted that both Galen and Harvey had remarked on the difference between the

lungs of a foetus and those of an infant who had breathed, and the test is referred to in the Bamberger Code. It was a Danish physician, however, Thomas Bartholin, also well known in other connexions, who in 1663 drew fresh attention to the hydrostatic test for determining whether lung tissue had respired or not. The first recorded practical application of the test appears to have been made in 1682.

Increase of Interest in Germany and France

Although it was in the Germanic States that modern forensic medicine may be said to have had its birth, the German physicians were not, surprisingly enough, so precipitate in their published works. They were not idle in a practical sense, however, and the application of forensic medicine proceeded faster in Germany than anywhere else. It was in Germany, too, that the first systematic instruction in the subject was given—by Michaelis, starting about 1650, and thereafter by Bohn, both in Leipzig. In 1689 Bohn published the first important work on the subject in Germany, on wounds, to be followed in 1704 by his more comprehensive treatise, *De Officio Medici Duplici, Clinici Nimirum ac Forensis*. Thereafter the number of German writers on the subject increased very rapidly, testifying to the growing importance attached to the subject. The *Corpus Juris Medico-Legale* by Valentini in 1722 was the first work seriously to rival the supremacy of Zacchia, and other impressive contributions were made to the literature by Boerner, Zittmann, Teichmeyer, Alberti, and others. Published cases or collections of cases became increasingly numerous, and helped greatly to define the problems most commonly encountered and the methods by which they might best be solved. A number of professorial chairs in State or forensic medicine were founded in the universities, and German supremacy in the subject was firmly established and rendered still more absolute by the labours and authorship of Plenck (1781), Metzger (1793), and others towards the close of the century.

No other country had displayed such consistent interest and activity. As has been suggested already, Italy lapsed into a non-progressive state from complete reliance upon the writings of Zacchia. Elsewhere interest was fitful and spasmodic. Even in France little or no progress was made until after the turn of the eighteenth century, when a notable increase in interest occurred. Initial credit for this must go to Louis, whose published works soon came to command high respect. His *Mémoires*, appearing in 1788, dealt with the signs of death, drowning, suicidal and homicidal hanging, and other topics. He is also to be remembered as the first systematic teacher of medical jurisprudence in France. Louis was followed by others such as Salin, whose investigation into a case of corrosive sublimate poisoning forms a landmark in the history of toxicology; Lafosse, who not only described the positive signs of pregnancy and parturition but also investigated various post-mortem phenomena and indicated how they might be distinguished from the effects of ante-mortem injury; and Chaussier, who in 1789 delivered a notable memoir which admirably emphasized and illustrated the importance of forensic medicine and who inaugurated a full course of lectures in the subject to a large class of pupils. Three French professorial chairs in legal medicine were established—at Paris, Strasbourg, and Montpellier. The occupant of the Paris chair, Professor Mahon, attained considerable fame, and, perhaps most notable of all, the name of Fodéré makes its appearance, before the close of the century, with the publication in 1796 of his *Traité de Médecine Légale et Hygiène Publique*. It might therefore be said that, while Germany still held the lead, France was advancing rapidly, while Britain had barely entered the field. She was, however, soon to do so, and the point seems opportune for a brief general survey of the worlds of law and medicine in which the new competitor was to take its place.

By and large, it can be said that the legal systems operating in most of the European countries were essentially the same as those which apply to-day. There have been many important and highly significant modifications. In Britain, for example, the number of capital offences has been reduced virtually to one from something like 150; the facilities for the defence of accused persons have progressively improved; the onus of proof rests much more heavily on the Crown, and the standards of proof required are much higher to-day than in 1800. I do not seek to minimize the fundamental importance of these and other changes or to suggest that we should do otherwise than maintain a critical, progressive outlook on our legal processes, but that does not affect the contention that the legal frameworks within which medico-legal science was called upon to function were essentially those of our modern societies.

Development of Scientific Medicine

The changes in the world of medicine during the past 150 years have been much more revolutionary in character, as I need hardly stress. Scientific medicine, in a modern sense, developing during the nineteenth century and progressing so tremendously during the past 50 years, can hardly be said to have had an existence before 1800. Nevertheless the profession had come a long way. The days of Galen's supremacy were far behind. The revolutionary discoveries of Harvey and his contemporaries had long since become part of the body of accepted medical knowledge. The work of Sydenham had profoundly affected the clinical attitude of the profession. Sir Thomas Browne had written his *Religio Medici*. Anatomy and physiology were reasonably well developed sciences. The scientific discoveries of Boyle, Hooke, Newton, Linnaeus, Black, Priestley, and Lavoisier had been made known to the world. The microscope had been in use for a hundred years, and many kinds of medical apparatus had been devised that were essentially modern in their concept and application. The great medical schools, of Leyden and Edinburgh in particular, had done, and were doing, much to advance medical knowledge and practice, and many of our Royal Societies had come into being. It is only necessary to mention the famous British names of the eighteenth century—the Monros, primus and secundus, Sibbald, Benjamin Bell, Cullen, Gregory, Smellie, John and William Hunter, Heberden, Dover, Astley Cooper, Jenner, and many others—to appreciate the great developments which had taken place in medicine since the time of the European Renaissance, between, say, 1550 and 1800, between the dates of the Bamberger and Napoleonic Codes, between the published works of Fideli and Fodéré respectively. Indeed, I might well conclude my brief survey with a quotation from the latter, who in the introduction to his treatise on legal medicine characterizes the eighteenth century as "an era remarkable for the conversion of the human mind from the enthusiasm of

poetry and the fine arts to the cultivation and study of the exact sciences." There were being sown the seeds which yielded such a large harvest in the following century and in our own day and generation. This, then, was the state of affairs, and this the prevailing atmosphere, in which forensic medicine was introduced into Britain as a distinct entity.

Some Famous Medico-legal Cases

It is true, of course, that there are many earlier instances of medical testimony being given in courts of law. In the records of the sixteenth and seventeenth centuries there are numerous cases in which surgeons gave evidence in cases of wounding. A few of these early instances have remained among our best-known medico-legal cases. In 1678, for example, the body of Sir Edmundbury Godfrey was found impaled on his sword to simulate suicide, but with his neck broken. At the trial which ensued two surgeons gave evidence on the time of death, and testified that the sword thrust was inflicted after death, and that the injury to the neck was due to homicidal violence. Titus Oates, the notorious perjurer, gave evidence for the first time at this trial, at which three men were found guilty of murder and subsequently hanged.

The trial of Spencer Cowper in 1699 gives us a very good idea of the state of such matters at the end of the seventeenth century. Spencer Cowper was a solicitor who was charged with the murder of a girl, Sarah Stout, whose body was found floating in a mill dam. The fact that the body was found floating was considered proof that it was dead when thrown into the water. This contention was supported by the testimony of two sailors from one of His Majesty's ships, who stated that the bodies of men who had been killed and then thrown into the water always floated, whereas the bodies of those who died from drowning always sank. Evidence was given by Dr. Cowper (the discoverer of Cowper's glands) and others to the effect that the cause of death had nothing to do with floating, but that bodies always sank whether they were alive or dead when placed in the water. Cowper also gave a good description of the phenomena of drowning and the reason for the presence of water in the lungs and stomach. While it cannot be contended that the medical evidence in this case was entirely satisfactory or free from contradictory features, it undoubtedly played an important part in securing the acquittal of the accused man.

The most famous trial of the eighteenth century, from a medico-legal point of view, was probably that of Eugene Aram, in 1758, charged with the murder of a man named Clark, 13 years previously. Medical evidence was called to prove the identity of certain bones which had been discovered and were alleged to be those of Clark, whose disappearance had remained unexplained for so many years. The witnesses deposed that the bones were those of a male of Clark's age and stature, and that death had been caused by a crushing blow on the base of the skull. This evidence undoubtedly played its part in the conviction of Aram and his execution.

Developments in Great Britain

These are simply a few of the more famous or interesting instances of medical evidence up to the second half of the eighteenth century, and, of course, occasional related articles had appeared in one or other of the journals which had come into being. So far, however, there had been no systematic study or teaching of forensic medicine in Britain, and no comprehensive British work on the subject. In 1788, the first step towards repairing the latter deficiency was taken when a volume was published by Dr. Samuel Farr entitled *Elements of Medical Jurisprudence*, which professed to be a "succinct and compendious description of such tokens in the human body as are requisite to determine the judgement of a Coroner and Courts of Law, in cases of Divorce, Rape, Murder, etc., to which [are] added Directions for preserving the Public Health."

About the same time, in Edinburgh, an even more significant development was taking place. In 1789 Andrew Duncan (1744–1828) was appointed Professor of the Institutes of Medicine (or Physiology) in the University there, and almost forthwith he began also to give a course of lectures in medical jurisprudence and public hygiene. He was thus the first in Britain to give systematic instruction in these subjects, and his interest and enthusiasm were such that before the end of the century, in 1798, he prepared and presented a *Memorial to the Patrons of the University of Edinburgh*. In it he gave what he called "A short view of the Extent and Importance of Medical Jurisprudence, considered as a Branch of Education." He used the term "medical jurisprudence" to cover both "medical police and juridical medicine" and proceeded to review their respective fields.

Some years later, in 1806, this *Memorial* was brought to the notice of the Government of the day by the Lord Advocate, with the fortunate result that in the following year, 1807, the Crown created in Edinburgh University the first British chair of medical jurisprudence. The step was not taken lightly, nor was there any lack of criticism and opposition. Some of the remarks passed in the Commons debate are worth recalling. One of the speakers declared that he was at a loss to understand what the Ministry could mean by the establishment of a professor of medical jurisprudence in Scotland; he could not comprehend what was meant by the science. Canning, then in opposition to the Ministry of Fox, said that he could only account for the appointment by supposing that in the swell of insolence, and to show how far they could go, the Government had said, "We will show them what we can do; we will create a professor of medical jurisprudence." By this time the course of instruction in medical jurisprudence had been largely taken over by Duncan's son, also named Andrew, and Andrew Duncan, secundus, became the first incumbent of the new chair in 1807.

The creation of the chair was not simply a matter of local importance. It stimulated interest in medical jurisprudence throughout the country, and from this time onwards we can consider the influence of British forensic medicine as well as that of the older Continental streams. In 1816 the first creditable book on forensic medicine in English was published by Dr. Male, of Birmingham, who in the preface acknowledges his great indebtedness to Professor Duncan, many of whose observations were quoted. About the same time courses of lectures in the subject were started by Dr. Harrison in the old Medical Theatre of Windmill Street, by Dr. Elliotson in the Anatomical Theatre at Southwark, and by Dr. John Gordon Smith in the Westminster Hospital and University of London. The last-named,

in 1821, published a comprehensive work entitled *Principles of Forensic Medicine, systematically arranged, and applied to British Practice*, which went through three editions in the next six years. In spite of this apparent success, it is sad to record that Dr. Gordon Smith died in 1833, at the age of 41, after 15 months' imprisonment in a debtors' prison.

In Edinburgh, Andrew Duncan, secundus, occupied the chair till 1819, when he followed his father as Professor of the Institutes of Medicine. Duncan wrote no large volume on the subject of forensic medicine, but his course of instruction and his essays and reviews in the *Edinburgh Medical and Surgical Journal*, of which he was editor, had a widespread influence. William Pulteney Alison was Professor of Medical Jurisprudence for a short period till 1822, when he was succeeded by Robert Christison (1797–1882). Christison will be remembered as perhaps the first and the greatest of our British toxicologists, and in 1829 he published his important *Treatise on Poisons, in relation to Medical Jurisprudence, Physiology, and Practice of Physic*. To the knowledge of toxicology he made many contributions, of which perhaps his work on oxalic acid, lead, and arsenic poisoning deserve special mention. He figured as medico-legal adviser to the Crown in many important cases, including the investigation of the notorious Burke and Hare murders, and his subsequent articles on the subjects of asphyxia and bruising are excellent. A contemporary account says of him that, "as a witness, he was remarkable for a lucid precision of statement, which left no shadow of doubt in the mind of the Court, Counsel, or Jury, as to his views. Another noteworthy characteristic was the candour and impartiality he invariably displayed." He remains one of the great figures in whom the University of Edinburgh will always take a great and legitimate pride. Thomas Stewart Traill succeeded Christison in the chair when the latter transferred to the chair of materia medica in 1832, and continued in it for 30 years.

In London, besides those already mentioned, Dr. Michael Ryan began a course of lectures in the Westminster School of Medicine about 1821, and 10 years later published the first edition of his *Manual of Medical Jurisprudence and State Medicine*, for which he drew extensively and judiciously upon the works not only of the Continental authorities but also of Christison and others of his British contemporaries. It is also worth while recording the appearance of a large work on medical jurisprudence, in three volumes, by the collaboration, for the first time in Britain, of a doctor and a barrister. This was the work of Paris and Fonblanque, which appeared in 1823 and has been rightly described as an elaborate and scholarly production. Then we come to another notable landmark —namely, the appointment in 1834 of Alfred Swaine Taylor as Professor of Medical Jurisprudence at Guy's Hospital Medical School. Two years later he published the first edition of his *Elements of Medical Jurisprudence*, which, besides running to many editions itself, foreshadowed his future notable work *Poisons* (1848), and the deservedly famous *Principles and Practice of Medical Jurisprudence* (1865). Ten years after Taylor's original appointment at Guy's, King's College followed suit by appointing Dr. William Guy as Professor of Forensic Medicine in 1844.

In the interval a chair had been created in Glasgow University (1839), the first incumbent being Robert Cowan. Cowan died two years later, and was succeeded by Dr. Harry Rainy, who continued in office until 1872. In Aberdeen, Francis Ogston started lecturing in medical jurisprudence in the same year as this Glasgow chair was created, but it was not till 1857 that he became professor of the subject there. In passing, it may be remarked that no further chairs in forensic medicine were created till very recently, and that, in fact, certain of the chairs which had been created were, in my view mistakenly, allowed to lapse.

Progress in Medical Investigation and Evidence

Enough has been said to indicate the tremendous awakening of interest in forensic medicine which occurred throughout Britain during the first half of the last century. The development of the subject meant that in greater and greater detail the progress being made in the medical and allied sciences was more and more closely applied to the requirements of the law. The standards expected in medical investigation and in medical evidence were revolutionized, and the place of medical opinion in the British legal system became more important and more clearly defined.

During the same period matters had not remained unchanged in other lands. In France the stature of Fodéré as an authority in medical jurisprudence, already considerable, was increased by the publication in 1813 of his greatest work, in six volumes, covering every aspect of forensic medicine and public health. It is a tremendous and learned compilation, and one which assures for its author a notable place in the history of the subject. He was not left long in his pre-eminence, however, for the name of Orfila was soon to stand at least equally high. Orfila was a Spaniard, a native of Minorca, who graduated in medicine in Paris in 1811 and subsequently became Professor of Legal Medicine in that city. From the time of his graduation he devoted himself largely to the study of chemistry and toxicology, and in 1814 published the first edition of his *Treatise on Poisons*. This work, which may be regarded as the foundation of experimental and forensic toxicology, went through many editions and was translated into several languages. Orfila's fame in this particular branch of science attracted many pupils, among them Robert Christison, of Edinburgh, whose interest and accomplishments in the field of toxicology may be said to have been due to the inspiration of his great master. But, though first and foremost a toxicologist, Orfila was a great all-rounder, and his *Leçons de Médecine Légale*, which appeared first in 1821 and also ran to several editions, covers the entire subject. Orfila's fame tends to overshadow that of his contemporaries, but of these there are several who merit comment in their own right, including Capuron, Lecieux, and Renard, while Devergie, also Professor of Legal Medicine in Paris and author of an important volume on the subject first published in 1836, achieved a measure of fame and influence which rivalled even that of Orfila.

In Germany, over the corresponding period, the influence of Plenck and Metzger persisted, both in the authority of their own published works and in the progress made by those who had been their pupils. The number of professorial chairs increased still further, and many of their occupants made their own significant contributions. Indeed, it would be difficult and tiresome to attempt a complete list of the prominent medical jurists from Germany and Austria at this time, and a very limited selection must suffice. Perhaps the Berlin

school was most distinguished and active, and here we find successively the names of Hecker, Henke, and Wagner, and finally that of Johann Ludwig Casper, professor in the University of Berlin, and forensic physician to that city. Casper died in 1864, shortly before the completion of the English translation of his handbook, which was published between 1861 and 1865 in four volumes by the New Sydenham Society, to whom all British students of the subject should be duly grateful. Of all the Germans of the period under consideration, Casper most deservedly ranks alongside the distinguished French authorities Orfila and Devergie.

By 1850, then, we may say that the teaching of forensic medicine was widely established in Britain and on the Continent, and its effects were to be seen in the increasingly skilled and authoritative use made of medical evidence in courts of law. As the century proceeded, the great progress made in medicine meant that such evidence could become increasingly precise and valuable. It is necessary only to mention the names of some of the outstanding figures—Helmholtz, Ludwig, Claude Bernard, Hughes Bennett, Virchow, Koch; or Addison, Bright, Mackenzie, Corrigan, Lister, Liston, Simpson—to remind you how great that progress was. In the same way, the march forward of forensic medicine to the threshold of our own day and generation can be indicated by a recital of names which become increasingly more and more familiar In Edinburgh, for example, I need only interpose the name of Douglas McLagan between those of Traill and Littlejohn to bring us into the present century. In London, Taylor died only in 1880, and the name of his successor, Thomas Stevenson, brings us very close to the comparatively modern days of Dr. F. J. Smith, of Guy's Hospital, and Ferrier, of King's College. On the Continent, we can note not only a similar progression of names, such as Brouardel, Tardieu, Maschke, etc., but also the rise of forensic establishments at Copenhagen, Ghent, Stockholm, Helsinki, and other national centres, and also the re-emergence of modern forensic medicine in Italy. It is worth remarking on the great development of applied medical jurisprudence in certain parts of the British Empire overseas, especially India, where it is associated with the names of Chevers, Lyon, Waddell, and others, and the development of a complete system in Egypt.

Medical Jurisprudence in America

In the United States forensic medicine has made rather uneven progress. A good and relatively early start was made in 1813, when Dr. J. S. Stringham was appointed Professor of Medical Jurisprudence in New York. Professor Stringham studied medicine at Edinburgh, where he qualified M.D. in 1799. No doubt, therefore, he was influenced by the teaching of the Duncans there. Many of the other medical schools quickly followed suit, and soon the inclusion of a course of medical jurisprudence became an almost invariable feature in America's medical curricula. One appointment which deserves special mention was that of Dr. T. Romeyn Beck as lecturer in the subject at the Western Medical College, New York State. This was in 1815, and in 1823 Beck published the first edition of his *Elements of Medical Jurisprudence*, which, no less than the numerous enlarged subsequent editions, has always been recognized as an outstanding book, comparing very favourably with any other work in the English language of a corresponding period.

The outlook for American forensic medicine thus looked very favourable. Somewhat surprisingly, therefore, we find, in 1876, a well-known American medical professor and dean, Professor Stanford Emerson Chaille, expressing himself very forcibly on the deplorable condition of medical jurisprudence in the United States. He bitterly criticized the legal system which permitted the appointment of coroners to remain a political lottery, with the result that incompetent men remained in office only a short time before giving way to others equally incompetent. He was critical, too, of the choice of incompetent medical examiners to carry out the necropsies and other inquiries in medico-legal cases. He also demonstrated how the teaching of the subject had fallen on evil days. In some colleges the course had been dropped altogether. In others it had become tacked on to some other subject as an unimportant appendage. In many, the teaching of medical students was carried out by a lawyer. Obviously the high hopes of early days had not been fulfilled, and it is to be feared that the handicaps to American medical jurisprudence continued to operate long after the date of Professor Chaille's strictures.

Within the present century, however, considerable improvements have taken place. Many State or city communities now have skilled medical examiners to whom all medico-legal cases are referred, and in a number of the leading medical schools medical jurisprudence is receiving greater attention. Among the modern American authorities are included the well-known names of Markland, Helpern, Leary, Gettler, and others. At Harvard, within recent times, the department of legal medicine has received great stimulation from Moritz and Hubert Winston Smith on the medical and legal sides respectively. It is probably not too much to hope that, in this field as in so many others, we may look for outstanding developments on the other side of the Atlantic.

Effect of Increased Specialization

One inevitable effect of the advance in knowledge was increased specialization. Soon the two branches of State and legal medicine became too large to be covered by the same umbrella, and Medical Police became a separate entity and went its own way as Public Health, the divorce being largely completed by the end of the nineteenth century. In the same way, the rapidly developing subject of psychiatry came gradually, and rightly, to absorb much of the work which had hitherto been included within the province of the medical jurist. So the scope of forensic medicine proper came to have its present-day dimensions, but, especially in recent years, even within this field there has of necessity been a great deal of specialization. The forensic pathologist, the forensic serologist, and the forensic toxicologist are each well-nigh specialists in their own right, and the present-day problem is largely one of providing establishments or institutes where a combination of these specialists can suitably operate as a team when necessary. Different countries have tackled the problem in different ways, and, while it is not my intention to deal with this subject here, it might be remarked that the arrangements in Britain are not yet ideal.

A further development is the closely related increase in the scientific investigation of crimes other than those involving the person—safe-breaking, housebreaking, fraud, etc.—or, of course, of material relating to crimes of violence other than the actual person of the

victim or the assailant. It is interesting to note that Paris and Fonblanque, 130 years ago, foresaw the possibilities in this direction, but, foreseeing also the immense widening of the field which it entailed, they deemed it wiser to concentrate on more purely medical matters. To-day, however, the field of forensic science has been widely explored, and on many occasions we must call for the co-operation not only of the surgeon, the obstetrician, the anatomist, the pharmacologist, etc., but also of the botanist, zoologist, entomologist, physicist, chemist, geologist, and others. It is not part of the medico-legal expert's task to be competent in all these spheres—that is an impossibility for any man; but it is incumbent upon him to realize just when it appears proper to invoke the co-operation of one or more of these specialists. There was perhaps a time when the progressive development of medical specialization seemed likely to render the medical jurist out of date or redundant. It seems to me that it is being more clearly realized to-day that that view, if it was ever seriously held, is a misapprehension, and that the need for sound teaching in forensic medicine and for the existence of specialists in the subject is greater to-day than it ever was. The study of forensic medicine should not constitute a major hurdle for the student on his long route to graduation, but it remains true to say that his medical education is incomplete if he finishes his studies without having had some instruction in the subject. I am very gratified to note that this view seems to be increasingly shared among those responsible for the programme of studies at the various medical schools, and that in a number of cases steps have been taken to establish a new department or to strengthen an existing one. I believe that the policy which this reflects is thoroughly sound, and I hope we may see still further developments in this direction.

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SUCCESSFUL BREAST-FEEDING*

BY

F. CHARLOTTE NAISH, M.D.

At all times "fashion" has played a considerable part in the degree of breast-feeding. From being unfashionable in the eighteenth and nineteenth centuries, breast-feeding passed at the beginning of the present century into another phase in which most women fed their babies. The common practice, however, was to feed every two hours—and sometimes as often as half-hourly. No doubt there were "feeding problems"; but there is no reason to suppose that breast-feeding was a general failure. In order to solve the problems some observers—among the first was Waller (1915)—established the existence of a conditional periodicity in the breasts. At once an army of non-thinkers set up a fashion of rigid regimentation—a fashion which was hollow and stupid, as often there was no feeding problem to solve. It produced a reaction, since the 1939–45 war, in the shape of "demand feeding," which, slavishly followed by unintelligent people, probably leads to just as much dyspepsia and trouble as the clockwork method. In my opinion all such fashions originate with people who read but do not understand the findings of original observers. The truth lies, as is often the case, on the middle road; and each nursing couple is an individual problem, to be studied as such.

The fashions I have mentioned have spread from medical circles to the general public. There are some that are more or less limited to professional circles. The large number of babies being underfed at the breast led Pritchard (1913) and others, following Pierre Budin (1900), to introduce test-feeding as a method of safeguarding the infant's food intake. This also was reduced by non-thinkers to a set of rules to be slavishly followed, and provoked a reaction—too violent, as usual—so that now test-feeding and even regular weighing of young babies are being decried as "never necessary."

I have found that with increasing experience and study of infant feeding I can manage with much less test-feeding, and now use it only to solve a problem or to strengthen a mother's confidence. It would be quite another thing to recommend that attitude to others as a starting-point. I think they too should work their way to it.

All these violent fluctuations of practice are so many red herrings that obscure the real and unchanging problem. We are dealing with a race of women among whom there are good, medium, and poor milkers. We ought to know the proportion of these groups; but this is very difficult to discover from the data now available.

What is the significance of the figures shown in Table I? The more I ponder them the more I am convinced that only two principles can explain them: success depends on continual supervision and on the encouraging attitude of those in attendance; and success breeds success through the altered expectations of the mothers in the district. If this is so, the figures reveal next to nothing about the proportions of good and bad milking strains in the population.

TABLE I.—*Incidence of Breast-feeding*

Series	Babies Artificially Fed at 8 Weeks	Babies Still Breast-fed at 3 Months	Babies Still Breast-fed at 6 Months
	%	%	%
Naish (1949) (100 cases)	21	67	65
" " (50 cases unpublished)	17·5	71	—
Finlay (Spence, 1938)	—	55	—
Brewis (Spence, 1938)	—	58·4	—
Williams (1947)	22	73	—
Hughes (1942)	—	41	—
Lewisham*	15	—	—
Southport*	76	—	—
West Sussex*	20	—	—
Cornwall*	55	—	—
Waller (1946) (100 treated antenatally)†	—	87	83
Waller (1946) (100 not treated antenatally)†	—	65	42

* Quoted in *Maternity in Great Britain*. Oxford University Press, London.
† 200 cases in same hospital.

Dr. Waller obtains the best results because, alike in the antenatal phase, in the puerperium, and in the follow-up of the infants, his workers are a united team. I cannot get such good work done in the puerperium, because I am dependent on a variety of nurses, in different nursing-homes or on different districts, who are not directly under my control. For the rest of the country also the results vary with the attitude of the

*Read in opening a discussion in the Section of Child Health at the Annual Meeting of the British Medical Association, Liverpool, 1950.

nurses and medical attendants, whether they are general practitioners or in the welfare services.

In this connexion I would like to say that I think doctors are too much influenced by their own family experiences, and make sweeping generalizations based on that exceedingly flimsy evidence. The fathers of children who have been adequately and easily breast-fed are inclined to attribute all difficulties to the mother's psychology. They may do even worse, and not supervise the progress of the babies, so that women less fortunate than these doctors' wives are left to cope with underfed infants. The fact that these babies improve as soon as they are artificially fed makes their mothers eternal devotees of the bottle system. Many such mothers could feed their children on the breast in part, and would gain much satisfaction from doing so.

At the other end of the scale is the doctor-father of children who were not breast-fed after the first week or two. He often seems impelled to gloss over his wife's physiological failure; so he advocates 100% artificial feeding, and says it is all nonsense that breast-fed babies are better.

One has to reply to these sceptics—not with any great hope of convincing them, because they have such powerful emotional reasons for scepticism, but in the hope of counteracting their influence.

We have travelled far from the days at the turn of the century, when the main problem was dirty milk and the fatal enteritis it gave rise to. Such dangers have not disappeared altogether, but they now take a lower place than the incidence of upper respiratory infections in the second six months of life. Grulee *et al.* (1935), in Chicago, have demonstrated, on the basis of a very large hospital series, how much more the artificially fed child is liable to such infections. I have been able to confirm this in the sphere of general practice by studying a continuous series of babies and finding that those who were artificially fed required nearly five times as many domiciliary visits for illness as those who were breast-fed for more than three months (Naish, 1949). It is worth particular mention that social class, which affects the infant mortality so much in the country at large, did not have any effect on the morbidity in this series (Table II), which was entirely dependent on the extent of artificial feeding.

TABLE II.—*Morbidity and Social Status*

Social Group*	Babies	Visits	Visits per Baby
Babies breast-fed over three months			
I and II	13	29	2·23
III	42	50	1·19
IV and V	12	14	1·17
Total ..	67	93	1·39
Babies breast-fed under three months			
I and II	7	43	6·14
III	18	102	5·67
IV and V	8	44	5·50
Total ..	33	189	5·73

* Registrar-General's classification.

I would urge other general practitioners to make a similar study of their infant patients: this cannot be done by paediatricians or infant-welfare personnel. It provides the most general measure of morbidity that I think anyone could devise. And it is calculated to convince them, as no amount of literature can do, that breast-feeding still has the advantage, whether it can be accounted for or not.

The Importance of Confidence

Given that breast-feeding, where it is possible, is a good thing, what can be done to improve the feeding powers of our medium and poor milkers? On the side of pure scientific research much remains to be done, and we ought never to lose touch with the agricultural experts, who are also concerned with these problems. Although we cannot avail ourselves of their easy way out—inasmuch as when they meet a persistently poor milking strain they cease to breed from it—yet their experiments are sure to be of help to us in our problems.

We, as clinicians, can do little in such matters except ask the questions and wait, patiently or impatiently as we please, for someone to give us the answers. In the meantime we have to make the best use of the knowledge we already have—and in the best place. I am convinced that we neglect broad psychological factors and small technical details, and that sometimes the two meet. Again we should observe the cow which, because of some upset of her routine, refuses to "let down her milk." We should then better appreciate the psychological care required in dealing with newly delivered mothers. (At this point let me say that by this rather tired word "psychological" I mean nothing very technical. What is wanted is sometimes common humanity, sometimes common sense.)

The willingness of general practitioners to give up the preventive side of their work with infants and the antenatal side of their work with mothers has bad effects on everyone concerned; but perhaps it is best to begin with the bad effects on the medical attendants themselves. They begin by looking at only one part of the problem. I have known it to be decided that nothing could be done for a certain baby because he had a "perfectly hopeless mother." The clinician who arrives at such a decision is regarding the baby and the mother as two distinct individuals—whereas surely it is obvious that there can never be any approach to the child except through the mother (and perhaps the father). But the mother had never been his concern, and it may well have been that the appearance of non-cooperation on her part was engendered by the fact that she was dealing with a stranger. We have all met the mother who prevaricates because she fears criticism. We have advanced far enough in our understanding of children to know that the fear of criticism and the resentment of ridicule may set an intelligent and affectionate child on the road to delinquency. We have next to learn that mothers and expectant mothers should be treated very like children—helped rather than criticized, led rather than ordered, and encouraged on every small success.

I must give a recent illustration of the emotional instability of motherhood. A junior nurse remarked to an elderly mother, one day when her milk supply was low, "Poor dear little thing! You're starving it, mother." This silly remark, thoughtless and pointless, destroyed all the confidence gradually built up in the mother during the antenatal phase, and brought her to a state bordering on hysteria, in which she believed the nurses thought she was doing it on purpose. In consequence, by the third week, when she returned to my charge, she really was starving the baby. By carefully re-establishing her confidence, and introducing a complement "as a temporary measure," I was able to get this mother calm again and to re-establish full breast-feeding, which was maintained for six months.

Such cases make it plain that the successful rearing of a baby at the breast may depend almost entirely on self-confidence, and this in turn depends on faith in the support of a familiar adviser. A woman supervised by many different authorities finds it hard to develop this confidence, either in herself or in her advisers. It would have been very hard to re-establish the confidence of this elderly mother, brooding on the nurse's supposed criticism, if I had not attended her antenatally.

Thus, starting with the bad effects of interrupted supervision on the medical attendants, we have come smoothly round to the bad effects on the mother, who needs encouragement and confidence and cannot get them from a succession of strangers. On the other hand, one of the ways in which a real family doctor can help the mother is to arrange for her to meet some of his other mothers, both successful and unsuccessful at breast-feeding, and discuss the outlook with them. He will probably not be able to do this if his mothers are taking their feeding problems to the health authority's clinic; so that antenatal preparation is not so good when the infant welfare is left to others. Everything is interconnected.

Physical Difficulties and their Management

At the same time that the psychological preparation is begun the breasts should be thoroughly examined, and as a rule they are not. I have seen doctors examine the heart and not notice the left breast while doing so. If this is because they do not expect to be concerned with the feeding, then it is due to the discontinuity. If it is because the condition of the nipples is thought to be a minor technical detail, then it is an illusion of the moment. A retracted nipple must be treated from the first month if it is not to be a bar to feeding; so it is no detail. And if neglect, or mistaken treatment of the breasts, leads to a woman's trying to feed with a cracked nipple, that is neither a detail nor a technicality. It is painful enough to be regarded as one of the major psychological problems.

Yet another post-natal difficulty whose treatment must be begun antenatally is the "congestive phase" in the first week: Dr. Waller has taught us to mitigate this by the hand-expression of colostrum in the last two months. I am convinced by experience that he is entirely right in respect of both the danger to lactation which this phase represents and the advisability of guarding against it.

Before the congestive phase is upon us we are faced with a problem which is both technical and psychological: the problem of whether the baby should suck before the milk "comes in." I call this partly psychological, because the usual reason for putting babies up to the breast is "so that they can learn to suck"—as though that was not the one thing they already knew, and as though anyone could teach them if they did not. Yet this idea that a reflex will be forgotten in three days if it is not brought into play is so firmly fixed that very often, where one has had no opportunity to train a team, one has to give way to it. However, if the baby shows any reluctance I will not have it pressed, believing that many newborn babies are suffering from a slight concussion and that over-stimulating them produces an irritability which makes the mothers apprehensive and the babies more and more tiresome. It does no harm to leave a full-term baby undisturbed until the third day. In any case, if practice feeds are done, I insist that they shall be short, since long sucking at this stage is a potent cause of cracked and sore nipples.

The congestive phase may follow almost immediately on the relatively milkless phase. My own method of dealing with it differs somewhat from Dr. Waller's for the reason that underlies most of our differences—the fact that a general practitioner cannot secure the same team-work. I warn the mother that if it occurs it will come on very quickly, and advise her to *use the baby* to get the milk away by *frequent short feeds*. I find that the baby will usually get away enough milk to establish a flow at a level sufficient for his particular needs. If the baby does not reduce the congestion enough, then the mothers follow the frequent sucklings by short spells of hand-expression. I find them willing and quick to learn the technique and to become efficient at it, but that short spells are less tiring for them than long sessions at less frequent intervals. I think it will be evident to you how important it is, during the two or three days that this phase lasts, that a spirit of confidence should have been built up beforehand.

It must be clearly understood that the mechanisms of the secretion and outflow of milk are quite separate. Congestion arises when there is some interference with or slowing down of the process of outflow. In other words, secretion goes on but the outflow or expulsion of milk does not keep level with it—therefore the breast becomes "congested." The afferent impulse for expulsion of milk is through the sympathetic nerves mainly at the nipple, though other parts of the breast, when stimulated with light touch, can set off the mechanism. At the brain centre the efferent impulse is presumably hormonal and allied to oxytocin. At one time it was thought that the expulsive efforts of the alveoli and ducts were caused by smooth muscle, but Richardson (1950) has shown that there is no smooth muscle in these tissues. The contractions take place in myo-epithelial cells. Dr. Waller holds the theory, and a very reasonable one it is, that, when congestion is allowed to develop to a severe degree and continue for more than a short space of time, these myo-epithelial cells become overstretched and are therefore, temporarily at any rate, paralysed. This, he says, accounts for the early failure of lactation or, as I term it, the "third-week drop."

If the congestive phase has not been properly dealt with it is usually in the third week that lactation fails. Even if that difficulty has been surmounted there is usually a drop in the third week—partly because of the combined effect of the mother's return to her duties and the sudden withdrawal of the nurse's advice and support. In my book I have called this drop "physiological": it occurred with such frequency that I thought it was so. I have since found, after closer supervision at this stage, that it need not occur; but nevertheless it is wise to be on the alert against it. Temporary complementary feeding is the remedy, and should be started without delay.

There is another point which has both a technical and a psychological aspect. Many doctors and nurses are still convinced that once you begin complementary feeding you are well on the way to artificial feeding. In practical experience I have disproved this contention over and over again. My mothers often use complementary feeding in the third and fourth weeks and are able to go back to full breast-feeding afterwards. Without any exception I insist that the complement be given with a spoon. The psychological side to the matter is that those who give complementary feeds and cannot withdraw them are precisely those who give the complement from a bottle. Yet nothing will persuade them that the two facts are connected.

Organization of Practice

It will, I think, begin to be plain that what I consider essential for achieving successful breast-feeding is not new. It is, in fact, a return to the original idea of a general practitioner of medicine. In this respect I do not wish to appear to decry the specialist doctor any more than I would decry the specialist barrister; but, whatever the fai ings of local magistrates, no one suggests that K.C.s specializing in some one branch of the law should plead in courts of first instance. What now happens in medicine, however, is very nearly that. There is no need for a pregnant woman to see her doctor at all. So long as she feels well she can wait till her pregnancy is beyond reasonable doubt and can then be attended by various local government officials—each doing his own little piece—until the child is a year old. She may remember to register the new baby on the general practitioner's list; she is just as likely to forget. The reason why this seems inferior to the family-doctor system is, in its broadest terms, this: the human infant being so immature and helpless, the process of reproduction is not even physically complete until a child can move about unsupported and feed itself. All that happens before that is a unity, and its different phases are emphatically *not* watertight compartments.

There is nothing in modern conditions to prevent the old system from working except the failure to realize its merits and advantages to all parties. This is how it can be done.

A special time should be set aside for antenatal work. Before the introduction of the Health Service the clinics offered two advantages: they were a free service, and they segregated the expectant mothers from the sick. Having allocated a time for antenatal work before the Health Service began, I am able to say definitely that the segregation was just as important as the absence of charge.

The second step is to extend the period of close *domiciliary* supervision up to the end of the fifth week. There is, of course, no fee to be recovered for doing that, and if the doctor is just a medical shopkeeper it is not worth while. To realize how very worth while it really is, the doctor needs to be aware how often feeding difficulties or the failure of lactation arise between 14 and 35 days; he needs the humanity to estimate the burdens of a woman at that time; and he needs the foresight and imagination to appreciate what dividends careful supervision of the first year of life can pay. If he looks at the problem that way, it will seem to him good practice to make two calls a week on his new babies, armed with a pair of portable scales, and attend to any question (not excluding the good laundering of napkins) that the mother wants to raise.

The third step is to ask the executive council's permission to limit an afternoon surgery to mothers attending with infants and pre-school children. Now that they are among one's "contract patients," this is viewed quite sympathetically compared with the days of national insurance of workers only. In view of the number of women who do not book a doctor for their second or later labours, this "clinic"—the patients will insist on using that word—must be open to all mothers on the practice, however the confinement was conducted. One of the advantages *to the mother* is that immunization and vaccination can be done at this session, and the mother's ailments be attended to, so long as they do not involve a gynaecological examination. It is a boon to a busy mother not to have a separate journey at a separate time in order to get treatment for herself. All this makes a busy afternoon, and some help is essential. It is very pleasant to have to report that the medical officer of health has recognized this work as something that the local health authority would have to do if it were not done as part of the practice, and that the health committee has allowed me the free services of a health visitor to help me with the weighing and the records. These are strong grounds for saying that general practitioners who are inclined to take up this work will not find the public health authorities against them, but inclined to help them.

Conclusion

This style of practice arises from the determination to achieve successful breast-feeding and from an increasing realization that that is not an isolated problem. I have said that it yields dividends. First under this heading comes the observation, already stated, that what seem to be "extra" visits and consultations in the first six months are really substitutes for the treatment of coughs and colds a year later.

Supervision of the infant, however, has much more interest. The second gain is that by supervision of the infants closer and pleasanter personal relations in the practice are built up. The parents cease to be people who just want to get something out of the doctor, once he plays an intimate and continuous part in an aspect of their lives of such emotional importance. In my own practice the mothers have lately formed a large voluntary club, self-supporting and self-governing, which meets once a month to discuss any subject that might conceivably affect their children's health. Its success can best be judged by the fact that the fathers became jealous and started a parallel organization.

The third profit is the satisfaction gained from developing a prophylactic outlook—in simple words, an interest in health—among people who otherwise glory in "serious illness."

The fourth profit is in the fascinating lines of study and opportunities for research which arise from a more continuous observation of one's patients—starting even prenatally.

Finally, if some general practitioners are in the future to be linked with teaching schools or with departments of social medicine, it will probably be those who do prophylactic work.

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In a very recent issue of the *Journal of the American Dental Association*, according to the United States Information Service bulletin *U.S.A. in Review*, is a description by Dr. Robert B. Black, of Corpus Christi, Texas, of how he drills teeth with compressed air, instead of using a mechanical drill. The air stream carries a controlled quantity of small abrasive particles, and when the jet is directed against a tooth it rapidly cuts it away. He has had experience of over 2,000 cases for filling or other dental treatment, and claims that it is less disturbing to patients. It creates less fear and apprehension than the conventional burr, which gives rise to vibration (bone-conducted noise) and to sensations of pressure and mechanical stimulation which are extremely unpleasant and fear-provoking.

THE HEALTHY CHILD: ITS MANY DISGUISES

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Probably the most difficult problem in the medical conduct of infant welfare centres and school health inspections is to decide what is normal and what abnormal. This question may be posed somewhat differently when we ask, "Does this condition require treatment?" Although this problem presents itself in a direct form to the medical officer examining large numbers of the apparently healthy, the practitioner or specialist whose function is the treatment of disease is also frequently presented with the question, "Is this disease?" and only too often he takes the easy way and answers, "Yes"—otherwise, he persuades himself, why did this patient come for advice?

The practitioner is really not primarily at fault, it is his education; for his teachers, with certain prominent exceptions, have not had great experience of the normal and do not give this problem the importance it deserves. In 1949, in two near-by boroughs of similar constitution in one county, at routine medical inspection of schoolchildren 9.6 in every 100 children had defects requiring treatment in borough A, while in borough B the number was 33.5. This was certainly not due to differences in the groups of children concerned.

Of course, now that all treatment is paid for out of public funds, it is essential, in order to avoid unnecessary expenditure on the treatment of essentially innocuous conditions, that the whole problem should be thoroughly explored; and education of the medical profession in this regard, rather than compulsory measures, should be a foremost endeavour in the struggle for economy. There can be no doubt that at present much public money is wasted on the treatment of normal or innocuous states.

I will attempt to describe some of these conditions and indicate fields for further research. As my experience has been mainly confined to children, this paper is likewise devoted to a study of these borderline paediatric states. The same problem presents itself, of course, in adults; but with them it is vastly more complicated, for an adult is ill if he thinks he is ill, though not necessarily in that connotation to which he attributes his malaise. In countries with less highly developed medical services these questions rarely arise, as they are swamped by gross disorders of infection and nutrition.

The problem is not new. In those fields where measurement is possible and statisticians may enter, the spread of the normal range has often been fully investigated: for instance, the literature on intelligence quotients is vast, and anthropological data such as heights and weights are numerous. I do not wish to concern myself with these matters, but with less obvious and often not measurable states. In the course of some years' experience dozens of these conditions have become apparent, both from my own observation and from the study of the observations of others.

These conditions are a heterogeneous collection, covering many specialties, and may roughly be divided into four groups. (1) Conditions essentially normal, though deviating from a theoretical ideal of perfection: examples are the naevi found at the nape of the neck and bridge of the nose in young infants. (2) Borderline states, such as enlarged tonsils or flat feet, in which clinical acumen is required to decide whether treatment is necessary or not. (3) Conditions definitely pathological, in which, however, the necessity for treatment is extremely doubtful—for example, geographical tongue or the almost universal symptomless infestation with threadworms. (4) Other conditions which are just frank misdiagnoses, such as the milk crust for seborrhoea capitis or the withdrawn testis for the maldescended.

Although many a physician will declare that he has known all about these conditions, experience has shown me that many others are unaware of the absence of the need for treatment. Furthermore, parents often worry and require reassurance.

Five Common Conditions

Five conditions stand out pre-eminently from all the others in importance, either by reason of the amount of public money that is unnecessarily spent on their treatment or by the effect that such treatment has on the later career of the individual. I refer to (*a*) enlarged tonsils; (*b*) orthopaedic "defects" in children under 5, such as knock-knees, bow-legs, flat feet, and valgus ankles; (*c*) phimosis in young infants; (*d*) constipation in breast-fed babies: and (*e*) innocuous cardiac murmurs and other sounds.

Enlarged Tonsils.—The extraordinary vagaries of the medical profession with respect to tonsillectomy have been discussed by Glover (1950), and the clinical indications (or lack of indications) by Illingworth (1950), who states that the appearance of the tonsils, unless they are so large as to cause obstruction, should never be a sole criterion for operation. Inadequate or careless surgery is also frequent (Gordon, 1947). Nevertheless, the profession continues stolidly on its way in recommending the operation, and the waiting-lists at hospitals are piling up to such an extent as to provide its own solution of the problem—an unfair solution, for those who require the operation are deprived of it.

Orthopaedic Defects.—Price (1949) states that "a very casual observation of the posture of normal children will refute the suggestion that the legs should be straight." In the first two years of life there should be a varoid phase with an outward curve and inward twist of the lower end of the leg. This is present at birth and compensated for by adduction and valgus movement of the foot. At about 2 years the knee becomes valgus, and this "deformity" is maximum at 4½ years and normal by the age of 6. At times there may be 2½ in. (6.3 cm.) between malleoli standing and 2 in. (5 cm.) lying. Stamm (1948) declares "flat-foot" in early childhood to be a myth, and insists on the far greater importance of deformities of the toes. Experience in infant welfare centres amply confirms the views of these two authors. Nevertheless, expenditure on wedges, special shoes, and splints continues at an unnecessarily high level.

Phimosis.—The subject of phimosis in early life has been admirably dealt with by Gairdner (1949). Whilst I feel that there is still room for discussion on the general advisability of circumcision, there is no doubt that in the early months it is impossible to tell if there will be phimosis in later life, and operations performed because of phimosis at this time have no scientific basis.

Constipation in Breast-fed Babies.—Constipation, in the sense of infrequent stools, in the breast-fed infant is entirely normal. Forty-one per cent of such infants in the third, fourth, and fifth months of life do not have daily stools (Gordon, 1951) unless they are given purgatives, enemas, or some such treatment. It is possible that such

measures may be the cause of chronic constipation in later life. Infrequent stools in later years are themselves a condition of doubtful moment if examination can exclude any serious disorder.

Innocuous Cardiac Murmurs.—Systolic murmurs in the heart have been the subject of much debate, and it is generally agreed that most of them are innocuous, while unnecessary attention or treatment leads to a neurosis. From my own experience I would have thought that the medical profession generally appreciated this, but Evans (1949) apparently considers that that is by no means yet the case, and he also remarks on the misinterpretation of the reduplicated first mitral and the accentuated first pulmonary sounds.

Other Conditions Causing Unnecessary Anxiety

There are also a large number of conditions in childhood that cause unnecessary anxiety and should usually be ignored. Some of them have not hitherto been discussed or sufficiently well defined and may require further investigation, but others will no doubt be considered obvious by some though misinterpreted by others.

Skin.—Naevi are often a cause of concern. The faint port-wine stains on the bridge of the nose (Airey, 1944) and nape of the neck in infancy are normal. The strawberry naevus disappears of its own accord (Lister, 1938). Small veins are seen on the back of the neck or opposite the insertion of the diaphragm (corona diaphragmatica) more commonly in adults, and are of no significance. Small pearly-white miliary sebaceous cysts are found on the face and nose, and less often elsewhere, in 40% of healthy infants. They disappear spontaneously, and are probably due to closure of hyperactive sebaceous glands by epidermis in the foetus (Gordon, 1949). I have known a case to be notified as pemphigus neonatorum. A red papular eruption on the face, less common than the sebaceous cysts and occurring later, is also harmless. Desquamation of the pink newborn infant and physiological jaundice are of course familiar. A bald patch on the occiput in infants is also common and soon remedies itself. The milk crust, a collection of oils and dirt over the anterior fontanelle, can be removed by soap and water if it is not secondarily infected by pityriasis simplex (Gordon, 1940). In cold weather an infant's hands often swell. This may be due to gloves being pulled off, and to tight sleeves; it has never, in my experience, given rise to any trouble. In hot summer weather mothers are often worried by the pigmentation that seems to be confined to a region just proximal to the finger-nails—sunburn. A blister is not uncommon in the centre of the upper lip, and in older children quite harmless scabbing occurs on the rim of the pinna of the ear. Mothers often complain bitterly of the sweating of their infants, but this is usually due neither to tuberculosis nor to rickets.

Nervous System.—It is here that it is most difficult to decide whether treatment is necessary or not. In the majority of the following cases the answer is against treatment: common tics, such as blinking; nocturnal enuresis in children under 5 years; masturbation and minor sexual mischievousness between small boys and girls; variations from the average in the amount of sleep required, and night terrors in small children in whom imagination is dawning; the small infant that jumps with a sudden noise, such as a sharp voice or the banging of a door; the head-banger, the breath-holder; morning sickness in the school-child who is anxious about his performance at school; the queer twisting of the hands of infants at 5–8 months of age that suggests athetosis but of course is not; nail-biting—18.6% of school-children bite their nails (Gordon, 1947). In all these cases precipitate action should not be taken, but the child must be considered carefully in its general reaction to stress. This subject is further discussed by Professor Capon (1950).

Mucous Membranes.—There is little relationship between the colour of the mucous membranes and the haemoglobin values (Adcock *et al.*, 1950).

Eyes.—Epiphora, due to a blocked tear-duct, clears of its own accord in most cases. Strabismus in the newborn has of course not the serious import that it has six months later. Blue sclerotics in infancy rarely betoken fragilitas ossium.

Urinary System.—If ammoniacal urine in an infant over 3 months does not cause a rash it is not a disease of the child but an error of hygiene (Gordon, 1940). In cold weather frequency of micturition increases, and clean babies may relapse; in hot weather there is less urine, and mothers are often worried over the red sediment.

Breasts.—The common secretion from the breasts of newborn infants is of course physiological and not a mastitis. Boys at puberty may occasionally complain of tender and somewhat enlarged breasts.

Cardiovascular System.—Besides the murmurs mentioned above boys are commonly brought to the doctor with complaints of fainting, especially when standing for long periods. This is usually not of any significance.

Ears.—Pinnae that stick out unduly require treatment only exceptionally by a plastic surgeon. Strapping is probably useless. Many infants touch their ears when teething, and this is not usually due to pain or otitis media. Mothers when talking of "discharge" from an ear more often refer to wax than to pus.

Bones, Joints, and Muscles.—Not a few infants hold their heads to one side. This usually rights itself without treatment and is not then a true wryneck. Asymmetry of face and cranium is very common, and in most cases the mother can be assured the "defect" will not be noticeable in later years. A depressed calcified anterior fontanelle must not be mistaken for one that has not closed. A "lump" on the inner side of the foot proves to be the tuberosity of the tarsal navicular. Mothers are often worried by quite normal protuberances on the occipital and temporal bones. They can likewise be assured about cracking joints. Divarication of the recti in infants is also of small moment. The "growing pain" has been dethroned from its position as an important rheumatic manifestation and is now largely regarded as a consequence of minor orthopaedic deformities. I doubt even this. These pains require adequate investigation, especially so far as history is concerned, but most are innocuous.

Genitalia.—The maldescended testis may on more careful examination prove to be a normal testis drawn up by the cremasteric muscle, especially if the weather is cold. The penis in the obese youngster with a suggestion of Fröhlich's syndrome may have a disconcerting habit of disappearing in the fat of the pubic region.

Growth and Progress.—At about 1 year of age many children temporarily cease to gain in weight, or may even lose. This is probably due to increased activity when the child is beginning to walk. Some children are late in walking because they have developed a technique of getting about by other means. The speed

of the "bottom-shuffler" has sometimes to be seen to be believed.

Lymphatic System.—D'Espine's sign—that is, bronchophony over the spinous processes at a lower level than usual—is not commonly an indication of hilar tuberculosis.

Larynx.—Small infants often have a quite harmless stridor and make many mysterious clucks and noises of little significance. The husky voice in toddlers is seldom the result of the papilloma on the vocal cords that we are warned about.

Conditions in the Alimentary Canal

Teeth may erupt at birth or at 1 year of age and yet be quite normal. Not uncommonly, there may be bleeding into the gum preceding eruption. The barbarous custom of incising the gum for these complaints is fortunately dying out, but has not yet quite disappeared. Grinding of teeth has usually no pathological significance. Dribbling does not forecast the imminence of eruption.

In infants the tongue may normally be kept protruded, deviate to one side a little if protruded, or not be kept still. A strawberry tongue does not always indicate scarlet fever. The geographical tongue is of no evil portent. "Tongue-tie" is almost invariably a figment of the imagination, and incision of the fraenum is not called for.

Besides the problem of enlargement of the tonsils, mentioned above, specks on the crypts often turn out to be food debris or small growths of a fatty or xanthomatous nature. The "won't eat" neurosis is more often a complaint of the mother than of the child. An infant that is contented and gaining well may regurgitate its feed to its heart's content. Curdling of the milk merely means that it has entered the stomach. Mothers often complain of halitosis in their children. Usually no cause can be found, and the child remains perfectly well.

Umbilical herniae in infants are so common that I doubt if we should call the smaller ones pathological. There is one condition in which an empty tag of skin protrudes from the navel: it is certainly not pathological, is not a hernia, and requires no treatment.

Mothers often complain about the stools of their healthy children. Green streaks turn out to be vegetable remains. With hard stools, or even with normal stools, streaks of blood may occur on one occasion: examination discloses nothing, and the condition may never recur. Threadworm infestation, if as common in England as in Holland (Schüffner and Swellengrebel, 1943), which I suspect it to be, is almost universal and usually symptomless. Is it, then, a disease?

Discussion

This latter question immediately brings forward the much debated problem, What is "health"? One school regards health as an ideal, an abstraction that is not to be sullied by association with disease, and a great deal of contempt is expressed for those who consider ill-health in forming their definition of health. They often incorrectly call their ideal "positive health"—a term which should be reserved for an effort, or striving, not a state—and express themselves with grandiloquence rather than with clarity. I hope the evidence of this paper is enough to show that health cannot be considered apart from disease, any more than the quality of hot can be considered apart from cold, or good apart from bad. One quality is necessarily employed in the practical definition of the other; it is no use scorning this feature of the human mind, it is the way it works.

As an example of the perfectionist line of approach I would like to quote Capon (1945). He states:

"The following features characterize a large proportion of healthy children: (1) The mucous membranes (e.g., the lips and palpebral conjunctiva) are definitely pink in colour. (2) The facial expression is happy, often radiant; smiling is frequent, and the eyes are bright and responsive. (3) The skin is smooth, elastic, and covers a sufficient layer of subcutaneous fat to give the limbs a rounded appearance. (4) The tissue-turgor is normal. (5) The muscles are well formed, and their tonus is good. (6) The limb bones are almost straight. (7) The stance is well balanced, erect, and graceful. (8) The spine is straight and the shoulder-girdles do not drop. (9) The arches of the feet are well formed. (10) The movements of limbs and body, in walking and running, are characterized by elasticity, agility, vigour, and poise."

This seems to me to be the description of an exhilarated ballet-dancer rather than the ordinary healthy schoolboy, were it not that ballet-dancers are said to have flat feet. The real danger of such an ideal, however, is that if a child does not conform to it it is considered necessary to see that he does, and steps are taken accordingly. That is, for example, if his conjunctivae are not pink enough, his legs not straight enough, his soles not arched enough, he must have iron by mouth, irons to his legs and wedges to his shoes, and undergo unnecessarily frequent examinations, causing unnecessary expense and unnecessary neurosis.

We do not get much further by putting a hyphen in "dis-ease." Within a wide range of disorders a man is as ill as he is determined to be. But are we to regard as an invalid a man with high blood pressure who makes the most of his complaint, and as in perfect health a man with similar blood pressure who does not complain? Obviously not; they each have something wrong, although not quite the same thing.

Then there is the "functional" school, which states that an individual is well if the disorder present allows him to perform his function in life satisfactorily—that is, a policeman with flat feet is unhealthy, whereas a typist is not. It is easy to pick holes in this argument, for so many of us have no useful function to perform, or, if children, do not yet know what our function in life is going to be. We may be old and retired, or in an asylum with schizophrenia; and to be logical this school will deprive us of the luxury of being ill by definition should we contract, say, tonsillitis. Again, two people may have precisely the same disorder and the same job. One—we all know him—will make the most of his trouble, and the other (we know him too, but not so well) will ignore it and continue to work as efficiently as before. Is the former ill and the latter well?

Even if a man feels well and functions well physical examination may disclose something of dire consequence for the future—for example, an early melanotic carcinomatous change in a mole.

It appears that the answer to this problem is a critical synthesis. We are healthy if we (*a*) feel well, (*b*) function well, and (*c*) if the objective signs of imperfection which we all can provide are such as, besides allowing (*a*) and (*b*) in the present, give reasonable confidence that we may feel well and function well in the not-too-distant foreseeable future.

It is, I hope, obvious that nothing that I have said can be construed as an argument against finding out and recording these conditions in children—that is, against routine medical inspections. My argument is that the interpretations should not be at fault. In fact, interpreting these universal imperfections is one of the most difficult tasks that can be required of a doctor, and for this reason should, in school-children, be left to doctors and not to teachers and nurses, as suggested by Professor Moncrieff (1950).

Summary

A description is given of a large number of paediatric "disorders" which are always, or usually, innocuous, and do not require treatment. It is pointed out that much public money is wasted on their treatment, especially since this has become free, and a plea is made for the education of the medical profession in this regard. A short discussion criticizes various definitions of health, and provides a new one.

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Dr. Edith Summerskill, Minister of National Insurance, has asked the Industrial Injuries Advisory Council to consider further the question of the methods of "prescribing" pneumoconiosis as an industrial disease under the National Insurance (Industrial Injuries) Act, 1946—i.e., how the classes of insured persons eligible for benefit for the disease should be defined. Pneumoconiosis is at present "prescribed" in relation to insured workers in a number of occupations which are known to give rise to a risk of the disease. These occupations include stone and granite quarrying and masoning, sand blasting, pottery manufacture, metal grinding, steel fettling, coal and certain other forms of mining, coal trimming, and slate dressing. The Council's Industrial Diseases Subcommittee under the chairmanship of Sir Wilfrid Garrett, who is also chairman of the Advisory Council, is now reviewing the present method of prescribing pneumoconiosis. It will consider such possible alternatives as prescribing the disease generally for all insured workers, or by reference to occupations involving exposure to concentrations of specified dusts. The committee may also reconsider the definition of pneumoconiosis for this purpose. It is at present defined as "fibrosis of the lungs due to silica dust, asbestos dust, or other dust, and includes the condition of the lungs known as dust-reticulation." Persons and bodies interested in the question of the method of prescribing pneumoconiosis are invited to submit written evidence for consideration. Communications should be addressed to the Council's Secretary, Mr. S. E. Waldron, Ministry of National Insurance, 30, Euston Square, London, N.W.1, as soon as possible, and in any event not later than May 1, 1951. An explanatory memorandum can be obtained from the Ministry on request.

RECURRENT SYNCOPAL ATTACKS FROM BRADYCARDIA IN AN INFANT

BY

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The convulsions of infancy probably include some types of syncope that have been recognized in adults, but opportunities to investigate attacks in early childhood are infrequent. In this case it was possible to make some observations, as the attacks continued to recur for a short period after admission.

Case Report

A female infant of 2 months was admitted on September 24, 1948, on account of convulsions. She weighed 7½ lb. (3.4 kg.) at birth, labour having been induced on account of hydramnios, and her progress had been excellent until September 20, when she developed coryza. Her general condition remained satisfactory until 18 hours before admission, when she threw up her arms and collapsed. Five other short attacks were observed during the next few hours.

On admission her ashen pallor and impalpable pulse made it appear that she was moribund. Nikethamide was injected intramuscularly. Her colour improved, a regular pulse of 128 was recorded, and a few minutes later her condition appeared satisfactory. She was apyrexial, and, apart from a few rhonchi, there were no abnormal physical signs. One and a half hours later the infant gave a few coughs, collapsed, and lay motionless with her eyes staring upwards; respiratory movements were imperceptible, and though the pulse could not be felt an apical rate of 40 was recorded. After one to two minutes she became moderately cyanosed and then began taking occasional gasping breaths; the apical rate rose to 128, normal respiration returned, and her colour improved rapidly. Similar episodes recurred at intervals ranging from 15 minutes to two hours. In all attacks when the pulse was recorded the rate fell below 55 (Fig. 1). An injection of 1 min. (0.06 ml.) of 1:1,000 adrenaline had no effect. Ten hours after admission she was given ½ gr. (32 mg.) of quinidine by mouth. No further attacks occurred except for a slight one a month later. A throat swab take shortly after admission gave a practically pure growth of Friedländer's bacillus, but, though

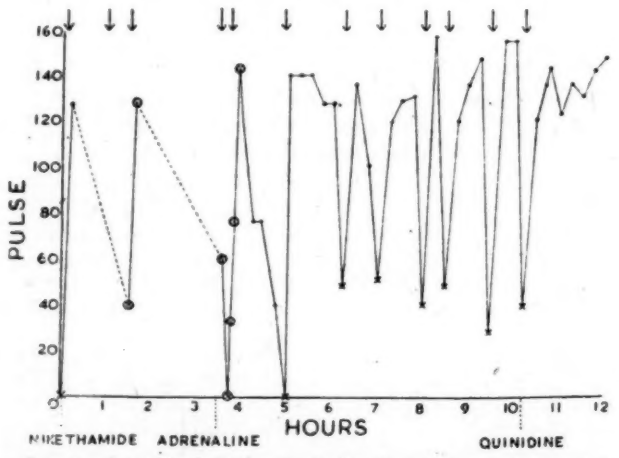

FIG. 1.—Record of pulse rate during first 12 hours in hospital. Times of attacks are shown by arrows; where a record of the rate was made in the attack it is indicated by an X. Readings obtained by apical auscultation or from cardiograms are encircled.

rhonchi persisted, no signs of pneumonic consolidation appeared. There was a hypochromic anaemia (Hb 60%). and the white cells were within normal limits.

An electrocardiogram taken during the onset of the fourth attack after admission showed that the rate had slowed to 60. The infant lost consciousness, and for a few seconds no electrical activity could be seen; then a regular rate of 37 was recorded (Fig. 2). During the next 15 minutes after recovery the heart rate, as determined by further cardiograms, varied considerably without loss of consciousness. one tracing (Fig. 3) showing a progressive increase in rate

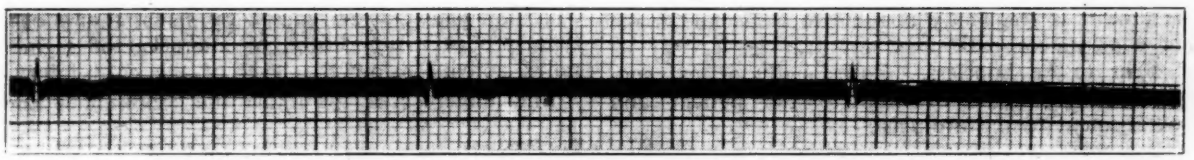

FIG. 2.—Lead III recorded during a syncopal attack.

FIG. 3.—Lead I taken a few minutes after the syncopal attack recorded in Fig. 2, showing a progressive increase in rate from 75 to 150.

from 75 to 150 within five seconds. Though a change in the position of the heart cannot be excluded as the cause of the large T waves in this record, it is possible that their elevation was due to an increase of vagal tone (Hartwell *et al.*, 1942). An electrocardiogram taken on the following day is recorded in Fig. 4, the rate having been normal for several hours.

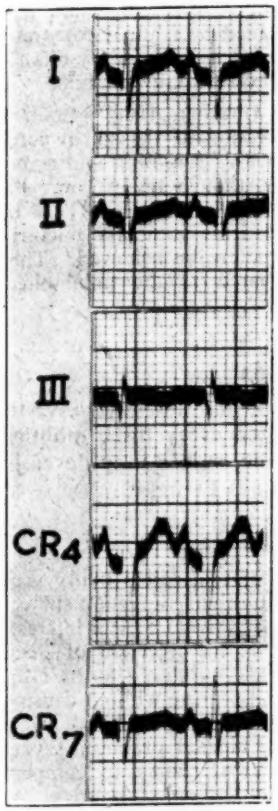

FIG. 4.—Leads I, II, III. CR4, and CR7 recorded on the day after that of Fig. 3, when the rate had been normal for several hours.

It is difficult to discern the P waves in the cardiogram taken during the attack (Fig. 2), but the condition seems to be one of sinus bradycardia with sinus arrest at times. Changes in voltage were probably due to difficulties in maintaining standardization. During convalescence attempts were made to reproduce bradycardia by injections of carbachol, and, though given in progressively larger doses until increased peristalsis caused discomfort, no effect on the heart was observed clinically or cardiographically. A year later there were no abnormal signs, and fluoroscopy showed a cardiac outline within normal limits. Attempts to cause slowing by pressure on each carotid sinus and eyeball were without effect.

Discussion

The development of bradycardia before the collapse, the moribund appearance during the attack, the rapid recovery, and the frequent recurrences are typical of reflex cardiodepressor syncope (vagovagal syncope). In his article on this type of syncope Weiss (1935) has enumerated various factors which may precipitate attacks by irritating the afferent fibres of the vagus, though none of them could be identified in this case. Little is known about the central connexions of the reflex arc, but nevertheless there remains the possibility of a localized disturbance involving these centres; in the more generalized disturbance of epilepsy Erickson (1939) found that bradycardia and asystole did not occur. On the efferent side of the reflex Weiss (1940) has emphasized the importance of infection and ischaemia in raising the sensitivity of the myocardium and nerve structures; in another paper (Weiss, 1939) he has pointed out that the infection causing a major disturbance of the heart's action may be an apparently innocuous bronchitis such as was found in this infant.

Ischaemia from narrowing of the artery to the sino-auricular node was considered to be the cause of recurrent attacks of bradycardia with syncope in the infant that Faessler (1939) reported. In the present case anaemia was the only factor suggestive of an ischaemic origin. The failure of adrenaline to prevent cardiac slowing of a degree sufficient to cause syncope was possibly due to inadequate dosage. Cessation of the attacks after quinidine may have been fortuitous, though it could have been effective through its action in reducing the excitability of the vagal endings (Stroud, 1950). Further study of this type of case may yield information about the causation of sudden death in infancy.

Summary

A case is reported of recurrent syncope due to sinus bradycardia in an infant. The possible causative factors are discussed and the effect of certain drugs is recorded.

I am grateful to Dr. W. A. Bourne for his encouragement and advice in the investigation of the case, and to Dr. Aubrey Leatham for much helpful criticism in the preparation of this paper.

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MANAGEMENT OF THE BLADDER IN SPINAL INJURIES*

BY

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The management of the bladder in spinal injuries is only too often a prolonged and arduous task. At the same time it is frequently possible to assist and make more comfortable patients whose troubles appear at first sight to be hopeless. Occasionally a real success brings lasting satisfaction to the patient and encouragement to the urologist.

The Act of Micturition

Although in normal circumstances micturition is under voluntary control, it is essentially a reflex act. The gradually increasing intravesical pressure causes the "stretch reflex," which in turn initiates contraction of the detrusor muscle, thus emptying the bladder.

It has been estimated that an intravesical pressure of between 18 and 43 cm. of water induces a desire to micturate. The wish to evacuate the bladder is dependent on the intravesical pressure, but is not always directly related to the amount of urine present. The bladder can find room for an increasing quantity of urine (within certain limits) by relaxation of muscle, but at a constant intravesical pressure.

It is interesting and perhaps important that the pressure caused by reflex contraction is not as great as the pressure in the bladder induced by voluntary contraction of the abdominal wall. This might well solve the main problem but for the fact that unless the detrusor muscle goes into action the bladder neck does not relax (Denny-Brown and Robertson, 1933). These writers believe that the internal sphincter contracts and relaxes in reciprocity with the detrusor. The interaction of the detrusor and internal sphincter probably initiates a further reflex resulting in relaxation of the external sphincter. The final outcome of these still somewhat obscure nervous mechanisms is the act of micturition.

Voluntary Control of Micturition.—Micturition is primarily a reflex act, but can be controlled by the cerebrum. Langworthy *et al.* (1940) state that "there is evidence of cortical representation over the function of micturition" and that "the co-ordination of vesical function is dependent on reflex arcs through the midbrain." It is probable that between the acts of micturition inhibitory impulses from the cerebral cortex are in control, and that it is the voluntary cessation of such inhibitory impulses which permits the reflex act to take place. The external sphincter can be voluntarily contracted but not voluntarily relaxed.

Nerve Supply of the Bladder.—The centre of micturition is situated in the sacral cord opposite the twelfth thoracic and first lumbar vertebral bodies. Both motor and sensory nerves reach the bladder from the second, third, and fourth sacral segments by the nervi erigentes or pelvic nerves. The sympathetic nerves are vaguely concerned with sensory aspects and play little or no part in the reflex act of micturition. It is suggested that any effect the hypogastric nerves exercise on the internal sphincter is concerned with ejaculation and not with micturition. The external sphincter muscle is supplied by the perineal or pudendal nerve arising from the pudic (second, third, and fourth sacral).

Various Results of Spinal Injury

The well-known term "spinal shock" has been in use for well over a century, being first used by Marshall Hall in 1843. Munro (1937) has defined it as "that condition which, when caused by spinal injury of any type, produces suppression or alteration of segmental reflex activity below the level of the cord injury."

Immediately after the injury the condition is known as:

Atonic Neurogenic Bladder.—The bladder becomes greatly distended and a paralytic overflow incontinence ensues. The only factor ensuring any evacuation of the bladder is the elasticity of its wall. This phase occurs in almost all cases, and lasts from days to weeks, or even months. As the patient gradually recovers from his spinal shock he passes into one of two further categories, depending on the level of the injury (Donovan, 1949).

The Automatic Bladder.—This condition, sometimes known as the reflex bladder, occurs when the injury has occurred above the centre for micturition, which has remained unscathed. The patient has no control over micturition, which occurs at intervals of up to three or four hours, but usually hourly. Several ounces of urine are forcibly evacuated, the amount of residual urine varying from case to case.

The Autonomous Bladder.—When the spinal injury has involved the centre for micturition, this type of bladder is to be expected. There is a continual dribbling from the bladder, which may be partly emptied by manual compression of the abdomen. Residual urine and secondary dilatation of the ureters due to back pressure are common.

Voluntary Neurogenic Bladder (Prather, 1949).—Prather points out that after partial transection of the spinal cord there will probably be some degree of sensation and some degree of voluntary motor power, though neither may be apparent for a lapse of time after the injury. There is considerable hope that in such patients voluntary micturition, though imperfect, may ultimately be achieved. This type of bladder has been compared to the uninhibited bladder of enuresis.

Investigation

The above are long-stay cases, and an initial investigation is valueless unless repeated every three months. Urinary infections wax and wane, stones may develop, and perhaps a hydro-ureter makes its appearance over a period of time.

Investigation includes the following:

Examination of Urine.—These cases of spinal injury provide a war of attrition with chronic urinary infection subject to acute exacerbations. The work of David (1921) is interesting in this respect. He found that the injection of *Bact. coli* into the bladders of normal dogs produced no harmful effect, the organisms gradually disappearing without causing any cystitis. If the dog had, however, any residual urine, the injection of *Bact. coli* into the bladder produced severe cystitis and renal infection. It is interesting to compare cases of Pott's disease of the spine with spinal injuries. At Wrightington Sanatorium, where I see many cases of Pott's disease suspected of possible genito-urinary tuberculosis, infection with ordinary pyogenic organisms is the exception, whereas at the Spinal Centre at Southport urinary infection is almost the rule.

* Read to the Section of Neurology at the Annual Meeting of the British Medical Association, Liverpool, 1950.

Radiograph of the Urinary Tract.—A straight radiograph of the urinary tract and an intravenous pyelogram is not only necessary in the initial stages of the investigation but must be repeated at three-monthly periods at least. A renal calculus may develop while the patient is under treatment or a hydro-ureter or hydronephrosis may appear insidiously. In certain intractable cases it is possible to demonstrate progressive deterioration of renal function over a period of years.

Cysto-urethroscopy.—In the earlier stages the bladder mucosa tends to be somewhat atrophic and to exhibit a fine trabeculation. As time goes on the trabeculation becomes more pronounced. The degree of trabeculation must not, however, be regarded as always indicating a bladder-neck obstruction, as it is sometimes seen in cases of catheter drainage. With regard to the bladder neck, probably other methods of investigation are more definite and helpful, but it is often possible to demonstrate a constriction or an indurative lesion, similar to a median bar, and forming a cuff of fibrous tissue and hypertrophied muscle. There frequently seems to be a chronic inflammatory change present at the bladder neck, suggested both by a bullous oedema of the trigone and by a lack of elasticity or fixity of the tissues in the immediate neighbourhood. I have no personal experience of Simons's (1936) method of sphincterometry, but I hope to introduce this additional method of investigation, as it seems likely that one of the bladder-neck resection failures was due to spasm of the external sphincter, which might have been identified before operation, and possibly treated by pudendal nerve block with better results.

Cystometric Studies.—Cystometry, or the relation of the volume of fluid in the bladder to the intravesical pressure, is of value in indicating detrusor contractions, bladder capacity, bladder sensation, especially the pain on distension, and maximum voluntary pressure. As long ago as 1934 Watkins, of Manchester, demonstrated the cystometric curves found in normal individuals, and indicated the upper and lower limits of normality. Fig. 1 shows the cystometrogram seen in atonic neurogenic bladder, the first phase after injury; there are no reflex detrusor waves. The maximum voluntary pressure (M.V.P.) is dependent on the level of the lesion, as it requires full activity of the abdominal muscles to be effective. Where there is no paralysis of the abdominal musculature a muscular effort ably assists the reflex detrusor effort. The cystometrogram usually found in the automatic or reflex bladder is shown in Fig. 2. Reflex contractions occur during the gradual filling of the bladder, but micturition (as shown by leakage around the catheter) does not occur until a moderate volume of fluid has been run in. Fig. 3 shows the position in the autonomous bladder.

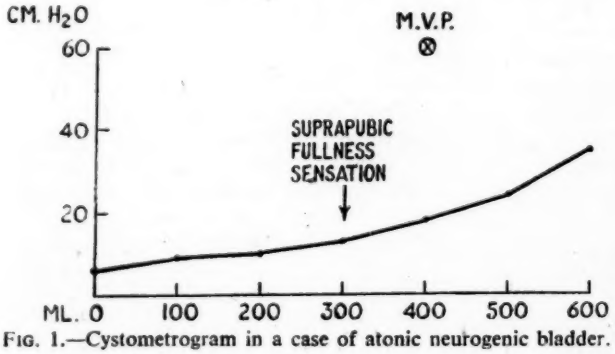

FIG. 1.—Cystometrogram in a case of atonic neurogenic bladder.

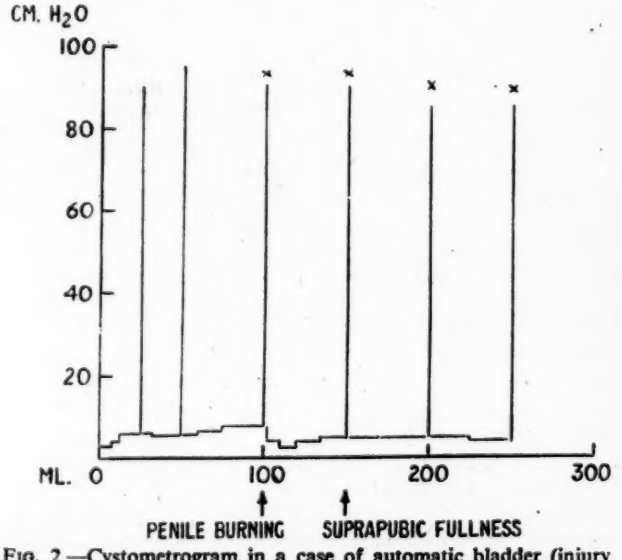

FIG. 2.—Cystometrogram in a case of automatic bladder (injury at T 3). × = Leakage around catheter.

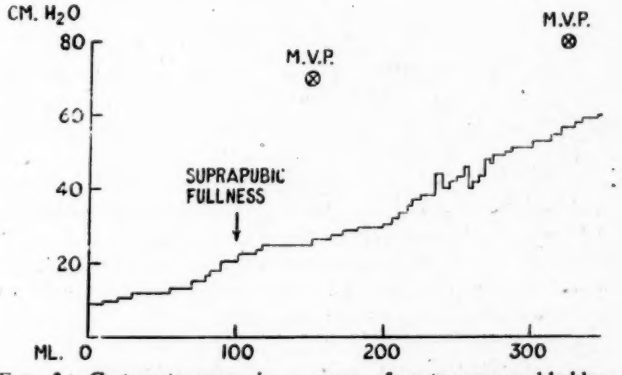

FIG. 3.—Cystometrogram in a case of autonomous bladder (injury at L 1). Residual urine = 14 oz. (400 ml.).

It has been suggested that the cystometrogram is of no value, but one simple illustration of its use will suffice: in the absence of reflex detrusor contractions it is obvious that caution must be exercised in closing a suprapubic fistula.

Cystography.—Cystography, or more strictly cysto-urethrography, has been employed more and more

FIG. 4.—Cysto-urethrogram indicating a shelf-like obstruction at the bladder neck.

at the Southport Spinal Centre, as it has been found to be an invaluable method of investigation. The consensus of opinion appears to be that the bladder neck is dilated in many cases of spinal injuries, but this is not true in all cases. Cysto-urethrography has been used to demonstrate a shelf-like obstruction at the bladder neck, and has been repeated after resection of the bladder neck to indicate whether enough tissue has been removed (Fig. 4).

Residual Urine.—A consistently high residual urine—say 10 oz. (284 ml.)—may be regarded as an indication for resection of the bladder neck. No case of spinal injury can hope to escape recurrent bouts of acute urinary infection if there is a high residual urine.

Complications of Spinal Injuries

The three menacing complications are infection, stone formation, and hydronephrosis with hydro-ureter.

Infection

Of these three the most dangerous, intractable, and persistent is infection. The route of infection is interesting, as in many cases reflux cannot be demonstrated and the infection must pass to the kidney either by the blood stream or by the lymphatics.

It seems almost impossible to keep the urine of these cases permanently sterile, and there always appear to be a few pus cells and stray bacteria in the urine. One causative factor is undoubtedly the presence of residual urine. Possibly, also, there is damage to the bladder wall due to prolonged overstretching during the initial stage. In the later phases it is found that overdistension, even for a few hours, may cause the temporary disappearance of reflex contractions.

Treatment consists in dealing with the acute attack of urinary infection with the sulphonamides, penicillin, or streptomycin, according to the sensitivity of the organisms concerned; it may be necessary to continue the course of treatment for a week. During the quiescent periods between the acute attacks prophylactic measures include forced diuresis—as much as six pints (3.4 litres) of fluid in 24 hours—and the elimination of urinary stagnation and of all obstructive factors. Finally, all authorities agree that the general condition of the patient is of great importance, especially regarding the elimination of toxaemia due to bed-sores. In experimental animals with transection of the cord, similar organisms have been found in the urine and in the bed-sores.

Urinary Calculus Formation

Unfortunately, stone formation is a common complication, approximately 9% to 31% of cases of spinal injury being thus involved. Flocks (1946) considers that there are three aetiological factors—infection, stasis (due to recumbency), and hypercalciuria. Stones can develop rapidly, hence routine *x*-ray examination is necessary at three-monthly intervals. I have often noticed that the stone is almost pultaceous in consistency and does not show very clearly in the radiograph. As might be expected, symptoms are trivial, and pain, especially renal colic, is generally absent. Recurrent bouts of pyrexia strongly suggest a calculus. Once the patient becomes ambulatory the tendency to stone formation diminishes. In the presence of postural stones it is advisable to maintain the urine acid (about *p*H 5) by the administration of ammonium chloride, which may be given in the form of cachets.

It may be necessary to remove the stone under certain circumstances, such as: (1) a stone obstructing the pelvis and causing hydronephrosis (it is not always necessary to remove a calyceal stone); (2) ureteric calculi which are impacted and causing obstruction; and (3) all stones in the bladder (usually by lithotrity).

In all surgical measures conservatism is the vital principle, and the kidney is removed only when disease has deprived it of all secretory tissue. The use of solution G either by means of a nephrostomy or by an irrigating ureteric catheter has, on the whole, proved disappointing, though one or two successes have followed its use.

Prognosis

As might be expected, in incomplete lesions of the spinal cord bladder recovery is earlier and more complete. In incomplete lesions between T 11 and L 5 the results are especially satisfactory because the distended overflowing bladder somewhat resembles the condition seen in prostatic obstruction and similarly responds to resection.

In complete transections a relatively satisfactory result may be achieved in lesions situated above the centre for micturition. In complete injuries below L 5 the outlook is extremely grave, the only hope being the integrity of the abdominal muscles.

Practical Management

Prather (1949) states the aims of treatment simply and concisely. He says: "The patient should become ambulatory and free of urinary infection. A patient who has sustained a *partial* transection of the spinal cord should attain voluntary control of urination and be capable of emptying his bladder. A patient who has a *complete* transection of the spinal cord should attain involuntary, periodic reflex voiding at satisfactory intervals and be capable of emptying the bladder."

Cases of spinal injury are scarcely ever admitted direct to the spinal centre, but are usually transferred from some other hospital. This is unfortunate, but it remains a hard fact. In view of the observations, mentioned above, regarding the damage to the bladder wall by overdistension, it would seem that the "non-interference" method is undesirable. Moreover, the particular difficulties in attempting this method in female patients have been emphasized by Riches (1943).

While disliking catheterization, I admit that there may be cases in which its use is indicated in spite of the great danger of encouraging a urinary infection, especially as the antibiotics have rendered this complication less formidable. Needless to say, if the urethral catheter is to be used at all, its use is permissible only with the greatest precautions and only in hospital.

If a neurological investigation makes it clear that the lesion is a partial transection of the cord (should this be possible at an early stage) it may be justifiable to drain the bladder by an indwelling catheter, provided the catheter is connected with a closed sterile drainage system. I am rather opposed to tidal drainage, as, in spite of the greatest care and trouble, it is not always possible to ensure complete emptying of the bladder, and there is thus a danger of leaving a puddle of pus and calcareous debris after siphoning off the supernatant fluid. A serious objection to the indwelling catheter is that possibly the urethral mucosa responds to the pressure of the catheter in a similar manner to the reaction of the skin over the buttocks to pressure. A catheter-sore may be produced in the urethra similar to a bed-sore over the sacrum.

In all cases of complete transection of the cord, and in all cases of doubt, the right course initially is to carry out suprapubic drainage, preferably using a small Riches (1943) catheter, placed well above the pubis. It may be many weeks or months before reflex micturition is established, and the management of such a case with a suprapubic catheter is infinitely easier and more efficient than with urethral drainage. The fact that a suprapubic opening has been made does not prejudice the subsequent development of automatic or normal micturition. The small opening left by a Riches catheter closes very readily, or it is an easy task to close the suprapubic fistula surgically; that is, provided there is evidence of reflex detrusor contractions in the cystometrogram and provided there is no obstruction at the bladder neck. Needless to say, the catheter must be changed every five or six days to prevent encrustation.

Bladder training should begin when the reflex or automatic stage has been reached. The catheter should be released at regular intervals by the clock. After removal of the catheter, attention should be directed to regular evacuation of the bladder (again by the clock) by control of the intake of fluid.

The light penile clamp may be useful in the case of the bladder which is constantly dribbling, though some American authorities condemn it. Its use depends on the intelligent co-operation of the patient.

Resection of the Bladder Neck

Resection of the bladder neck is the most interesting and certainly the most promising advance in the treatment of this condition. Emmett (1945) believes that in spinal injuries the internal sphincter acts in close conjunction with the detrusor and, contracting with it, constitutes an obstruction at the bladder neck. Although in many cases of spinal injury there is dilatation of the bladder neck, in some there seems to be an indurative condition, similar to a median bar, at the internal urinary meatus. In my opinion the patient should satisfy certain strict criteria before being considered suitable for resection. These include: (1) a persistent and large residual urine; (2) satisfactory reflex detrusor contractions in the cystometrogram; and (3) a demonstrable obstruction by cysto-urethroscopy or by cysto-urethrogram.

Resection is probably most often indicated in the autonomous bladder. For the actual resection I use a Gershom–Thomson cold punch, removing eight to ten strips from 5 to 8 o'clock from the bladder neck, the strips extending from the highest point of the verumontanum upwards to the internal urinary meatus. The greatest care must be exercised, as there is little thickness of tissue between the prostatic urethra and the prostatic capsule. It is better to remove too little and be prepared to repeat the operation if necessary (Lane, 1950, personal communication).

In carefully selected cases it is possible to achieve most satisfactory results with this method. The residual urine falls sharply, the tendency to infection diminishes, and it is possible to allow the suprapubic opening to close. In some cases it is also possible to demonstrate the disappearance of hydronephrosis and hydro-ureter.

I have carried out this operation in 16 cases, but further experience is necessary before a full evaluation of the method is available. A careful analysis of the last seven cases revealed two successes, improvement in two, and three failures.

Other Methods

Other possible methods of treatment include the use of a fascial sling (by Millin's method) formed from the rectus sheath in cases in which the abdominal muscles are under voluntary control and the external sphincter is paralysed. Recently, Bors, Comarr, and Moulton (1950), working in the Veterans' Hospital, California, have suggested four additional methods of treatment: (1) spinal anaesthesia, (2) subarachnoid alcohol block, (3) pudendal nerve block, and (4) vesical neck anaesthesia.

A pudendal nerve block to induce a paralysis of the external sphincter muscle has been carried out on two of my cases with apparent benefit, but this work is still at an early stage of development. It is in this type that cysto-urethrography should prove so useful, indicating the exact site of the obstruction, whether at the bladder neck, at the external sphincter, or in the prostatic urethra, the so-called pseudo-sphincter level.

Conclusion

It is necessary to emphasize that it is possible to deal with these cases only at a special centre. Collaboration between neurologist, neurosurgeon, plastic surgeon, orthopaedic surgeon, and urologist is effective only if they are all interested in and accustomed to dealing with the particular problem. It is also necessary to mention that the nursing of these patients requires the most specialized knowledge and care.

Finally, although the management of these cases is troublesome and tedious in the extreme, the figures are encouraging. After the 1914–18 war only 10% were alive a year after injury, whereas now 85% are alive at the end of a similar period.

I am indebted to Mr. N. Gibbon for the cystometrograms and to Dr. Damanski, of the Southport Spinal Centre, for the radiograph.

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Speaking at Cardiff recently, the Minister of Health said that the incidence of infant mortality and maternal mortality was heavier in Wales than in England, but there had been a striking improvement recently. Between 1938 and 1945 the figure of infant mortality for England and Wales had fallen from 53 to 46 per 1,000 and in Wales from 57 to 55. In the years of peace and full employment from 1945 to 1949, while the England and Wales figure had fallen from 46 to 32, the Welsh figure had fallen equally fast—from 55 to 40. Though the difference between the countries left no room for complacency, the rapid improvement was a cause for national satisfaction. In one matter Wales had taken the lead. Up to January 31 of this year 325 trained nurses and 2,169 auxiliaries had been enrolled in Wales for the National Hospital Service Reserve—a total of 2,494. He praised the work on pneumoconiosis done by many research workers, especially at the research unit at Llandough Hospital.

HAEMANGIOMATA OF THE INTESTINE

BY

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The case history of a child who for five years had had repeated attacks of bleeding from the bowel due to multiple haemangiomata of the intestine is presented. It is thought worthy of record because of its unusual nature and the method of treatment employed.

Haemangiomata of the intestine are uncommon causes of intestinal bleeding, and, when multiple, set a difficult problem in treatment. The first recorded case was published by Gascoyen in 1860, his patient having haemangiomata in the bowel wall, liver, parotid gland, and skin. Series of cases collected from the literature and descriptions of new lesions were published by Brown (1924), Kaijser (1937), Lazurus and Marks (1945), and Hansen (1948); and, so far as can be ascertained, the number of reported cases of haemangiomata of the intestine is now 85.

The ages of these 85 patients (54 males, 31 females) ranged from 2 months to 81 years, and 44 had single and 41 multiple lesions, the distribution of which was as follows:

	Small Bowel	Large Bowel	Large and Small Bowel	Not Stated
Single lesions ..	27	16	—	1
Multiple lesions ..	28	3	10	—

Types of Haemangiomata

Kaijser (1937) divides haemangiomata of the intestine into five types: (1) Multiple pin-point varicosities consisting of dark bluish-red nodules which vary in size from a pinhead to a pea and are scattered over a limited portion of the intestine. They are usually situated in the submucosa. Each nodule is made up of communicating cavities, which connect with the smaller veins. They may not be true tumours but the result of venous back pressure, and are usually symptomless. (2) Diffuse infiltrating cavernous haemangioma in which the cavernous tissue usually involves all layers. The bowel wall is thereby thickened and the lumen narrowed. A common site for this type of lesion is the rectum, and haemorrhage from the bowel a frequent occurrence. (3) Circumscribed cavernous haemangioma. This type if often polypoid. (4) Capillary haemangioma, which usually appears as a round submucous tumour, up to a plum in size, protruding into the canal. (5) Multiple haemangiomata, which include tumours varying in structure from the usual cavernous type to one rich in cells and stroma. They may be associated with haemangiomata in other organs.

Symptoms

Though in some instances there are no symptoms referable to the intestinal tract, the most common symptom is that of bleeding from the bowel, the incidence of haemorrhage being higher in those in which the lesion is in the large intestine. The loss may consist of dark altered blood or of bright red blood, which may be profuse enough to endanger life. The bleeding is often undetected at first, the patient being treated for anaemia, perhaps severe and of long standing. A feature of many of the reported cases is that the patients have been several times in hospital for anaemia, sometimes with a haemoglobin level of below 20%, and have required treatment by blood transfusion, abnormality of the gastro-intestinal tract not being discovered until revealed by laparotomy several years later. Other symptoms that may be caused are those of obstruction (as by intussusception) or of inflammation.

The diagnosis is rarely made pre-operatively, but it can be emphasized that if a patient presents with a history of repeated attacks of melaena, often since infancy, if there is marked anaemia, and if no abnormality can be discovered in the gastro-intestinal tract then the possibility of haemangioma of the bowel should always be considered. The presence of other haemangiomata—for example, in the skin—strengthens the suspicion and was helpful in the diagnosis in our case. Other conditions which may give a similar clinical picture are gastric or duodenal ulcer, peptic ulceration in a Meckel's diverticulum, intestinal polyp, haemophilia, and purpura.

Treatment

The most successful method of treatment has been surgical excision, particularly of the single lesion, the involved length of gut being resected if the lesion was not too extensive. So far as can be ascertained from the literature, in only one case of multiple lesions of the small and the large bowel has surgery been attempted. In this case, described by Lazarus and Marks (1945), there were multiple haemangiomata of both small and large intestines. It was decided that most of the bleeding was from lesions in the large bowel, and colectomy was performed in two stages. There had been no further bleeding when the patient was seen about one year after operation.

Other methods of treatment which have been employed are cauterization, partial extirpation, irradiation by *x* rays or by the use of implanted radon seeds, and injection of coagulating substances

Case Report

The patient, a female child aged 6 years, was first seen by one of us on April 6, 1950, on account of recurrent attacks of pallor. The child's delivery had been normal, and her birth weight was 9½ lb. (4.2 kg.). It was noticed at the time that she had six toes on both sides, and the supernumerary toes were removed at the age of 2 weeks. At 1 month it was noted that the child had a small lump over the left chest wall resembling a cyst about 1 cm. in diameter: the skin over it was of normal colour. This lump continued to grow until, when the child was 16 months old, it was 5 cm. in diameter. During the next few months three attempts at excision were made, but it was clear that the condition was a haemangioma; bleeding was troublesome, and only partial removal was effected.

When the child was 3 years old the mother observed that she seemed to be very pale, but, in thinking back, remembered that the child had always been rather pale. At the age of 3½ the haemoglobin was 33%, and liver injections were given, the haemoglobin rising to 80%. At about this time a second lump was noticed near the spine, and at the age of 4 a course of *x*-ray therapy was given to both swellings, followed by injections of saline into the lumps. This caused both swellings to shrink. Since that time the lump

near the spine had disappeared, but the tumour over the chest wall remained much the same size. From the age of 3½ onwards there were periods during which the child grew very pale: sometimes a tinge of yellow was noticed in the conjunctivae. After a few weeks the colour gradually returned.

On examination the patient was pale, but there was no icterus. The liver was enlarged to two fingerbreadths and the tip of the spleen could be felt. Over the left chest wall in the mid-axillary line there was a subcutaneous cavernous haemangioma about 8 by 8 cm. Both feet were misshapen, and a radiograph revealed a congenital abnormality of the first metatarsal bones.

Blood investigations showed: haemoglobin, 37%; red cells, 2,110,000; haematocrit, 20%; M.C.V., 95 μ^3; M.C.H.C., 27%; reticulocytes, 20%; white cells, 4,400, with a normal differential. The fragility test was normal and the Coombs reaction was negative.

Progress

The child was admitted to hospital, and examination of the stools consistently showed the presence of occult blood. It was considered that the intermittent attacks of anaemia were due to intestinal bleeding, the possible differential diagnosis being between a peptic ulcer, Meckel's diverticulum, and haemangiomata of the gut. A barium meal showed no abnormality. The child was given a small blood transfusion and was then sent home on an ulcer regime to see whether this would stop any further bleeding.

Within a week she was readmitted because of severe pallor, the haemoglobin having fallen to 25%. A further blood transfusion was given, and a week later the child again returned home. Twice the sequence of pallor, low haemoglobin, and transfusion was repeated, and it was clear that medical treatment for a possible peptic ulcer was having no effect on the disease and that the most likely diagnosis was bleeding from a Meckel's diverticulum or from haemangiomata of the gut. Laparotomy was therefore considered.

On admission to hospital on August 17 the child appeared to be well, the haemoglobin level being 50%. Further blood investigations showed: M.C.V., 80 μ^3; M.C.H., 24.7 $\mu\mu$g.; M.C.H.C., 31.2%. It seemed that the red cells were larger than normal, so a marrow puncture was carried out, but nothing abnormal was found. A repeated barium meal, barium enema, and gastric analysis were normal. All specimens of motions contained a large amount of occult blood.

Suddenly on August 28 the child became very pale and the haemoglobin dropped to 33%. A blood transfusion was given, and in consultation with Professor Bentley it was decided to carry out operative treatment.

Treatment

On September 8 an operation was performed by Professor F. H. Bentley (anaesthetist, Dr. Philip Ayre). A right paramedian incision was made. Multiple small haemangiomata were seen at intervals along the whole length of the small bowel, varying in size from 2–3 mm. up to 1 cm. in diameter. The tumours were dark blue in colour and situated apparently in the submucosa at no regular position in relation to the circumference of the bowel. A few similar lesions were scattered throughout the large intestine.

The only available treatment was to open the bowel in many places and remove the tumours. The procedure was begun at the proximal end of the jejunum: at the site of each haemangioma a short incision was made longitudinally into the antimesenteric border of the bowel, the haemangioma clamped, the base ligated with thread, and the tumour excised. The incision in the bowel was then sutured in two layers.

Sixteen such incisions were made and 19 haemangiomata removed. At this point it was decided to stop, leaving about another dozen haemangiomata to be removed at a later stage from the lower end of the ileum.

Immediate post-operative recovery was uneventful, but a week after this first operation the patient began to bleed again, and occult blood in the stools remained strongly positive. The haemoglobin, which had been as high as 83%, now fell to 49%. It was considered that the next stage of the operation should not be further postponed.

The second operation was performed by Professor F. H. Bentley on September 27 (anaesthetist, Dr. Philip Ayre). A right lower paramedian incision was made. Seven more haemangiomata were removed by a similar method to that used at the previous operation, and two further tumours of larger size plus several smaller angiomata were excised by resection of a 5-cm. length of small bowel, with end-to-end anastomosis. Severe adhesions were noted from the previous operation.

Post-operative recovery was again uneventful and the child's general condition improved, the haemoglobin rising spontaneously to 93%, but the occult blood in the stools still remained positive. The child was discharged home on October 19, with the intention of removing the few tumours from the large bowel at a later date if this proved necessary. Two months later the child was well and the haemoglobin level was 85%.

Summary

The literature on haemangiomata of the bowel is reviewed.

A case of multiple haemangiomata of the small and large bowel in a child is described. For six years the patient had suffered from recurrent severe anaemia due to intestinal bleeding. At operation 30 separate haemangiomata were removed from the small intestine.

Haemangiomata of the bowel should be included with other well-known causes of intestinal bleeding in the differential diagnosis. The presence of subcutaneous haemangiomata, as in this case, strengthens the likelihood of intestinal vascular tumours. Operative removal is the only effective remedy.

We wish to thank Professor Sir James Spence and Professor F. H. Bentley for their advice in the preparation of this article, and the resident doctors and nurses at the Child Health Department, Royal Victoria Infirmary, Newcastle-upon-Tyne, and the Children's Hospital, Sunderland, for their care of this ill child.

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Mr. Hilary Marquand, Minister of Health, recently welcomed teams of medical and social workers who have come from seven European countries to study the treatment and care of disabled children in Britain. Speaking at a luncheon at the Royal National Orthopaedic Hospital, Stanmore, Middlesex, he paid a tribute to the work being done at the hospital, and said that it was being run on the basis that disabled persons asked not for pity but for opportunity. "The whole conception of this and similar hospitals," he added, "is to rehabilitate the patient so that he or she can take their place as far as possible in the normal life of the community. The accent is not on pity or sorrow for suffering, but on rehabilitation—the opportunity to make a new life by overcoming physical handicap." The Minister and the European visitors examined the many ways in which children and adults, after receiving surgical treatment, are helped to overcome disabilities mainly affecting arms and legs. This international study course has been organized by the World Health Organization and the United Nations International Children's Emergency Fund. Its members, who will spend eight weeks in Britain, include orthopaedic surgeons, physiotherapists, occupational therapists, vocational training instructors, technicians, teachers, and social workers.

LARGE OVARIAN CYSTS

BY

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The safety of laparotomy has made possible the radical removal of ovarian cysts; consequently there must be few places in the world where cysts are allowed to grow until they outweigh the patient. One such place is Abyssinia, and the reason is not so much the paucity of medical services as the reluctance of Abyssinians to seek surgical relief. Ovarian cyst is very common in Abyssinian women: during 1943 and 1944 very many cases were seen at the British Red Cross Hospital in Addis Ababa. In three of these the cyst weighed more than the patient; they are of interest because of their present-day rarity.

A Typical Case

In the first of the cases the diagnosis was not made immediately. An Amhara woman aged about the middle thirties presented with what appeared to be a very gross ascites, stated to be of some 15 years' duration. The abdomen was globular, its tightly stretched skin being smooth and shiny. An intense fluid thrill could readily be elicited. The woman was extremely emaciated, and unaided could not support the weight of the huge abdomen. One of my assistants had noticed that there was no moving resonance in the abdomen, and that in all postures the colonic resonance remained in the normal bilateral and epigastric positions. I advised paracentesis and a thorough examination of the abdomen after deflation, but owing to pressure of work I did not see her when this was done. After the paracentesis the assistant felt a number of hard rounded lumps in the abdomen. The dark-brown cystic fluid was rich in cholesterol crystals. On these findings, combined with the gross emaciation, he diagnosed peritoneal neoplasm and sent the patient home. After the paracentesis she experienced a comfort she had not known for years, and it was stated that she left hospital in a state of extreme gratitude at having been so readily cured.

The patient came to me three weeks later. Her state of nutrition had improved considerably, but her abdomen was becoming enlarged and she wanted the curative needle inserted again. The presence of abdominal masses was confirmed. They were several inches in diameter, and were hard, smooth, and elastic. They were freely movable and were attached to a palpable cyst wall of leathery consistence. The presence of the cyst wall could be demonstrated readily by sudden pressure over the lower abdomen, which caused a visible fluid wave to rise upwards to a level above the umbilicus, where it was arrested by a convex upper margin.

The patient was admitted to hospital and built up for operation, a process which required several weeks. During this period further paracentesis was necessary to keep the abdomen within bounds.

Operation

The conditions obtaining at operation were so similar in each of the cases that the following general account could apply equally well to any of them. The abdomen was opened under open ether anaesthesia and the greyish cyst wall presented. Adhesions to the omentum, to the mesentery of the small intestine, and to the peritoneum of the posterior abdominal wall were widespread but for the most part tenuous, and required ligature at only a few points. The pedicle was as thick as two thumbs and contained vessels as large as a forefinger. It was several inches long and was ligated with ease. On removal of the cyst the abdomen presented a curious appearance. The alimentary canal, displaced into the flanks and epigastrium, consisted of thin flattened intestines, pale and bloodless, while the stomach was hidden completely above the left costal margin. In short, the abdomen appeared to be almost empty. We were confronted with visible evidence of the cause of the cachexia—namely, the effect of the mere physical pressure of the cyst in preventing adequate alimentation and absorption.

After removal the deflated cyst showed a dense wall with the consistence of leather. Both in texture and in size it resembled the cover of a deflated football. It could be indented by the fist, and the indentation remained: this sign was elicited through the abdominal wall after paracentesis in the second and third cases. Rounded plaques of greatly thickened cyst wall were scattered over the surface; these explained the masses, which had originally been mistaken for cancerous deposits in the peritoneum. These areas consisted of dense fibrous tissue. In its deflated state the lining of the cyst consisted of a shaggy vascular membrane which must have been very thin in the fully distended state. The cyst was unilocular.

Management

The amount of fluid withdrawn at the original paracentesis of the first case was not noted by my assistant, but it could not have been less than in the other two, in which it was 32 and 30 litres. The patients were in a greatly emaciated state when first seen. After paracentesis their body weight was under 66 lb. (30 kg.), so that the cysts outweighed the patients by several pounds. The patients were aged about the middle or late thirties, and the cysts were stated to have been present for up to 15 years; but as the Abyssinians have little sense of time the duration may well have been less than this.

After the experience of the first case diagnosis was easy in the other two. The length of the history was of obvious significance. The extreme degree of abdominal distension and the lack of movable resonance excluded a diagnosis of ascites. Deflation was performed slowly, with a many-tailed binder maintaining intra-abdominal pressure throughout, for fear of splanchnic dilatation causing collapse. The improvement in nutrition which followed paracentesis was very dramatic: after several weeks each patient had gained weight out of all recognition. Refilling of the cyst occurred at a variable rate, and two or three repeat punctures were necessary to maintain deflation and to encourage alimentation between the first paracentesis and the time of operation.

The accompanying photograph of the second case before paracentesis illustrates the gross deformity which such cysts cause.

Photograph of the second case. The ovarian cyst contained 7 gallons (31.8 litres) and weighed more than the patient.

The appearance of this woman after recovery was very striking. She was plump and smiling and looked at least 20 years younger. Six months after operation she became pregnant and in due course was delivered of a normal baby, whose advent seemed to round off her happy story.

It is the contemplation of such cases as these that emphasizes the debt we owe to the pioneers of abdominal surgery. A condition that presented an insoluble problem less than a century ago is now a commonplace of routine work, and one is apt to forget that it has been made possible in our generation only on the foundations laid by Lister and the men who came after him.

Medical Memoranda

Aschheim-Zondek Test with Urines from Non-pregnant Tuberculous Women

It has been suggested that false positive Aschheim-Zondek and Friedman tests for pregnancy may be associated with pulmonary and genital tuberculosis in non-pregnant women (Allen *et al.*, 1939; Heynemann, 1940; Siegler, 1944; Grollman, 1947).

It seems possible that tuberculosis of the pelvic region, involving the adnexae and, in particular, the ovaries, may cause pathological ovarian dysfunction similar in its effect to physiological dysfunction at the menopause. If so, the subsequent appearance of excessive follicle-stimulating hormone (F.S.H.) in the urine might result in a positive A.-Z. reaction. Such an explanation cannot, however, be accepted for the positive results observed by some workers with urines from non-pregnant women with pulmonary tuberculosis. Genital tuberculosis is invariably a secondary infection (Curtis, 1946), and the recorded positive reactions from pulmonary cases may be due either to non-detection of a secondary infection involving the adnexae or to the patients being at the menopause. So any positive reactions that appear would most likely occur as a result of F.S.H. excretion.

Material and Methods

It has been found that females of *Xenopus laevis* are relatively insensitive to F.S.H. (Landgrebe and Samson, 1944). This fact, coupled with the extraction technique (Scott, 1940), probably accounts for the negative Hogben results obtained in cases of excessive F.S.H. excretion.

The A.-Z. test, on the other hand, may give a positive result with excessive F.S.H. excretion, and pregnancy can almost certainly be discounted if the Hogben test is negative. It was therefore decided to carry out parallel A.-Z. and Hogben tests, according to the modifications of Landgrebe and Hobson (1949), on first morning specimens of urine from 110 non-pregnant women with pulmonary tuberculosis whose ages ranged from 16 to 44 years; 36 women with histories of genital tuberculous lesions and 124 men with pulmonary tuberculosis acted as controls. The results are shown in the Table. If other possible causes of increased F.S.H. excretion can be eliminated (McCullagh and Cuyler, 1940), it was hoped in this way to develop a simple diagnostic test for genital tuberculosis.

Patients	No. of Urines Examined	Aschheim-Zondek		Hogben	
		+	−	+	−
Women with pulmonary tuberculosis	110	2	108	0	110
Women with genital tuberculosis	36	0	36	0	36
Men with pulmonary tuberculosis	124	0	124	0	124
Total	270	2	268	0	270

While, however, the Hogben test did not give a single positive, a positive A.-Z. result was obtained from only two pulmonary cases. One of these was extremely weak, the ovary of one mouse had two haemorrhagic follicles, and in the three other test animals no result was found. Repeated tests on this patient failed to produce a further positive.

The second positive result—haemorrhagic follicles in all four mice—was obtained from an unmarried girl aged 18 who had been a bed patient for more than two years. Before admission she had some dysmenorrhoea and an occasional missed period; since admittance her periods, except for a short interval, have been regular. A week later a follow-up test was negative; daily tests were done between periods, and in one, performed two days after menstruation, two of the test animals had enlarged follicles and no blood spots, the other mice being negative. This might occur with urine from normal non-pregnant women.

The mice used in the A.-Z. test are supplied by dealers as 3-weeks-old immature females. In order to obtain some idea of the percentage of false positive results attributable to the test animal, due to spontaneous maturation of their ovaries, examinations of small batches of animals from each delivery were made. In all, some 500 untreated animals were examined, and two of them had ovaries containing haemorrhagic follicles. Therefore, both the positive results obtained might easily have been due to this.

Conclusions

Positive A.-Z. reactions are not usually obtained from urines of non-pregnant tuberculous women. Cases yielding positive reactions reported by other workers are probably due to associated endocrine disorders, menopausal urine, and/or maturity of the test animal. No positive results were obtained with the Hogben test, and it is suggested that this test be used when urines from tuberculous patients are sent for "pregnancy test."

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Laurence–Moon–Biedl Syndrome in a Central African Native

The Laurence–Moon–Biedl syndrome was first described in 1866 by Laurence and Moon. Four cases occurring in the same family were recorded in which retinitis pigmentosa was associated with other abnormalities such as dwarfism, hypogenitalism, mental deficiency, and obesity. Bardet (1920) recorded a case of retinitis pigmentosa, polydactylism, and adiposo-genital dystrophy, and Biedl (1922) reported on two cases occurring in the same family. The disease is rare, and Radner (1940) recorded some 200 cases, but McCullagh and Ryan (1941), quoting Schwartz and Boudreau, list only 129 cases to the middle of that year.

The following are now generally agreed to be the cardinal features of the condition: mental deficiency, retinitis pigmentosa, adiposo-genital dystrophy, polydactylism, or syndactylism, and a family history. The diagnosis is usually made in the absence of one or more of these features, but if no family history is obtained all the other stigmata must be present for the diagnosis to be made. In a review of the then known cases by Reilly and Lisser (1932), only one-third showed the complete syndrome. Other anomalies reported as occurring with the syndrome are atresia ani, deafness, night-blindness, and nystagmus.

The pathogenesis of the disease has not, as yet, been fully elucidated, but Hecker and Warren (1937) stress the importance of the mental deficiency, the result of defective germ plasm, other changes being secondary through involvement of the hypothalamus and, indirectly, the pituitary body. The skeletal changes are considered by them to be primary manifestations of defective germ plasm.

Case Report

The patient, a Bantu boy, has lived his whole life in the bush about 10 miles from Ndola, Northern Rhodesia. He was brought to hospital by his parents, who stated that they were worried by his obesity and his lack of growth. An interpreter reported that it was impossible to get a history of the illness from the boy, as he appeared to be mentally defective. This was confirmed by another interpreter. Apart from volunteering that the boy's age was 16 years and that the obesity had been of very gradual onset, the parents gave no further information.

On examination the boy lay quietly in bed, and questioning confirmed the mental deficiency. The facies were dull and stolid, the features coarse. His weight was 84 lb. (38.1 kg.) and his height 46 in. (116.8 cm.). The skin was smooth and dry over the trunk, and of normal colour. There were no striae atrophicae. The hair of his head was thick, coarse, and curly; his eyebrows and eyelashes were of normal colour and distribution, and there was a total absence of both pubic and axillary hair. The distribution of the obesity was of girdle type, but the whole trunk was involved. His hands were short and broad, and there was the stump of a rudimentary digit on his left hand. He had six toes on his left foot. The genitalia were infantile. The left testis was not in the scrotum, and the right was atrophic. A striking feature was the very marked coarse nystagmus, which made examination of the eyes very difficult. It was soon evident that he was almost totally blind.

The consultant ophthalmologist, Northern Rhodesia, gave the following report: "Marked pendular nystagmus present. Pupils react normally. Fundus shows bilateral marked optic atrophy with disappearance of disk capillaries. The retinal vessels are very attenuated and cannot be traced out to the periphery of the fundus, and differentiation between arteries and veins is possible only on the disk itself. The general eyeground shows choroidal atrophy, and there are large patches of pigmental degeneration scattered indiscriminately throughout the fundus, the largest being half the diameter of the disk, and solid in appearance, as contrasted with the spidery pigmentary deposits of classical retinitis pigmentosa. As the macular region is involved in the general choroidal atrophy it is impossible to define the fovea."

Radiological examination showed a shallow but normal pituitary fossa, with no erosion of the clinoid processes. Ossification of the carpus was considerably delayed, and was comparable to the degree found in a normal African boy of 10 or 11 years. *X*-ray examination of the chest revealed no abnormality.

The blood pressure was 110/68, and there was a mild hypochromic microcytic anaemia, the haemoglobin (Sahli) being 70%. The urine failed repeatedly to reduce Benedict's solution. The Kahn test was negative, as was the first part of Kepler's test. There were no facilities for the performance of tests of ketosteroid excretion or for the measurement of the B.M.R.

The diagnosis of Laurence–Moon–Biedl syndrome having been arrived at, an effort was made to trace his family. It was found that the patient was the eldest of five children, three boys and a girl making up the rest of the family. All three boys died within a few days of birth. The girl, aged about 11 years, was examined, as were the parents and a boy who was said to be a first cousin, but none of them showed any stigmata. The Kahn test was negative for all. Efforts to induce other members of the family to come forward for examination were unavailing.

Comment

This case is of interest in that it is, so far as can be ascertained from the available literature, the first of its kind to be described in either a native African or an American negro. The syndrome is complete apart from the family history. Some features of the case lead one to suspect that there was also present a mild degree of hypothyroidism, which has been noted by Anderson (1948) in association with the syndrome. The boy was accordingly given 5 gr. (0.32 g.) of thyroid daily, and there was a sustained slight general improvement in his condition, in that he asked to be allowed to walk about the ward, whereas before he was content to lie log-like on his bed. Further, his haemoglobin rose to 84% with no further haematinic therapy. On stopping thyroid therapy he relapsed to his original condition. The degeneration of the retinal pigment was not typical of retinitis pigmentosa, and this is in accordance with the findings of other authors, notably Cockayne *et al.* (1935) and Ellis and Law (1941).

My thanks are due to Dr. C. M. Phillips, consultant ophthalmologist, Northern Rhodesia, for his report on the condition of the eyes, and to the Director of Medical Services, Northern Rhodesia, for permission to publish this report.

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McCullagh, E. P., and Ryan, E. J. (1941). *Cleveland Clin. Quart.*, **8**, 236.
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Reviews

PHYSIOLOGY FOR STUDENTS

Textbook of Physiology and Biochemistry. By G. H. Bell, B.Sc., M.D.Glas., F.R.F.P.S., F.R.S.Ed., J. Norman Davidson, M.D., D.Sc.Ed., F.R.F.P.S., F.R.I.C., F.R.S.Ed., and Harold Scarborough, M.B., Ph.D.Ed., F.R.C.P.Ed. With a foreword by Robert C. Garry, M.B., D.Sc.Glas., F.R.F.P.S., F.R.S.Ed. (Pp. 918; illustrated. 45s., plus 1s. 2d. postage.) Edinburgh: E. and S. Livingstone. 1950.

Any physiologist who tries to produce a book nowadays soon realizes that he has undertaken a most difficult task. The mass of knowledge available in the literature is so stupendous and the degree of specialization so high that, as Professor Garry points out in the foreword, "it is doubtful if any one writer can to-day give a complete and balanced picture of even the elements of physiology." One could perhaps say with still more truth that it is almost impossible to give a balanced and complete picture of any part of physiology, even in an advanced style, and still less possible to give an adequate picture of the elements of the subject. But as physiology still forms, and will for long continue to form, the backbone of the medical curriculum, teachers must at least try.

It is unfortunate that the needs of research and those of instruction so often run counter to one another. In the interests of the former the interpretations of function which involve chemical techniques or viewpoints have led to the establishment of special departments of biochemistry in the universities; there is a similar tendency with the applications of physics to physiology. But in the interests of teaching medical students the separate teachers of physiology, or of what remains of it, and of biochemistry must get together in the almost hopeless endeavour to try to give the student a grasp of a subject which is admittedly so vast that they have been compelled themselves to discuss severally but a part of it, and from these artificially separated parts to reconstruct a homogeneous whole.

It would be easy to find faults with the results of such an effort, but one wonders whether anyone so critical would be likely to do any better. In the circumstances, the authors of this work have done extremely well and got as fair a balance as could be expected. The illustrations are very numerous and well produced; they could hardly be expected to be all new. Some beginners on whom the text was tested reported well of its intelligibility. Authors and publishers are all to be congratulated on providing a good all-round book which should appeal to a wide range of students.

C. LOVATT EVANS.

RESULTS OF LEUCOTOMY

Pre-frontal Leucotomy. A Survey of 300 Cases Personally Followed Over One and a Half to Three Years. By M. Partridge, M.A., D.M., D.P.M. (Pp. 496. £2 2s.) Oxford: Blackwell Scientific Publications. 1950.

It is a little difficult to conceive what Dr. Partridge intended by this study. It is not a primarily statistical work, for the numerical data are not arranged in a convenient tabular form (so that it is difficult to find one's way about), and it is often unclear whether categories are inclusive or exclusive. Despite the book's great length, only a selection of the patients are described in detail, and much of its value for reference purposes is lost thereby. Regarded as a clinical contribution, the presentation loses by its unwieldiness. The author should not have expected to carry the interest of his readers through such a sea of words, even by the tidal flow of his own good spirits.

The factual background is large and important. The later histories of 300 leucotomized patients, operated on by Mr. Wylie McKissock, were followed for one and a half to three years. Dr. Partridge is an accomplished clinician and has the gift of reporting his findings vividly. He probably missed little of what could be found by ordinary methods of psychiatric examination. It is therefore important that he finds *some* sign of impairment of personality in practically every case. The question arises whether the price that is paid is justified by the benefits which result. In general the answer can only be affirmative. The patients were nearly all severely ill and had been totally incapacitated for a long time. The best results were obtained in the very mixed group of affective disorders, in which 54 out of a total of 85 recovered, and a further 15 improved. The schizophrenics did far less well, but in so far as the picture was coloured by affective or atypical features the results were more favourable. The obsessional neurotics are divided into those showing compulsive rumination (of whom all improved and three-quarters recovered), and those with ritualistic behaviour (of whom all but one improved, but only two-fifths recovered).

The author concludes that the operation has its greatest effect on the positive emotional symptoms of agitation and distress, and is much less effective in cases where there is apathy or emotional loss. After the operation emotions are less complex and less intense, and intellectual life too is simpler. The physical basis of the bleaching of affect is attributed to degeneration of the dorso-medial nucleus of the thalamus. Dr. Partridge favours the view that the prefrontal cortex, a main receptor area for hypothalamic stimuli, "may be concerned with enabling the agitating or enlivening effects of hypothalamic activity to find their fuller and richer expression in the emotional life." It follows that interruption above the level of the thalamus could be expected to result only in a reduction of the fullness of the emotional experience, and not, for instance, in eliminating the occurrence of delusional ideas.

Although the investigation tends to confirm current ideas, and does not suggest anything very strikingly new ("Parturiunt montes . . ." the author observes), it represents very thorough and careful work on a large number of cases and deserves close study.

ELIOT SLATER.

ANALYTICAL PSYCHOLOGY

The Inner World of Man. By Frances G. Wickes. (Pp. 313; 79 plates. 21s.) London: Methuen. 1950.

The contributions to Jungian psychology—analytical psychology—have been considerable in recent years. This volume is an addition to the growing list. But it has distinctive features. In the main it is a series of clinical annotations in which various concepts of analytical psychology are brought into focus. Thus the anima, the animus, the persona, the shadow, the self are discussed in direct relation to the treatment of patients. The book is written with the calm assurance of one who, over many years, has applied Jung's teaching in the analysis of patients. There are no polemics and no comparisons with other disciplines.

Nor is there any attempt to produce a textbook or to cover the entire field of analytical psychology. The author's aim throughout is to express an individual relation to the unconscious as it appears in personal material and in the images of the collective unconscious.

A section is devoted to the use of art in psychotherapy. This is illustrated by a fine collection of drawings, many of them in colour. Those who have observed the drawings and paintings of patients will find evidence here which supports the view that unconscious material is produced quite apart from the expectations of the therapist or patient.

The book appeared in America 12 years ago, and Jung himself commended it as a sound introduction to analytical psychology. An English edition is welcome. But it is a pity that some account of Jung's more recent work has not been included. The author hardly mentions transference, for example, and does not refer to Jung's empirical study of alchemy and its significance. And there is no index. This is a serious defect, for the book contains material of enduring worth.

E. A. BENNET

THE HEART LAID BARE

You and Your Heart. By H. M. Marvin, M.D., T. Duckett Jones, M.D., Irvine H. Page, M.D., Irving S. Wright, M.D., and David D. Rutstein, M.D. Foreword by Paul D. White, M.D. (Pp. 306. $3.) New York: Random House, 457, Madison Avenue, New York, 22.

The physician's erstwhile practice of looking wise and saying nothing may have been the best way of preserving a mutually satisfactory relationship between two ignorant people, but in these enlightened days rapport seems to require a more positive technique. Patients are beginning to ask awkward questions, not only about diagnosis and rational treatment, but also about causes and prevention of disease. In presenting the lay public with *You and Your Heart*, three professors and two directors have clearly taken sides in the issue involved and have armed the sick citizen with invaluable ammunition.

Practitioners may well have to read the book in self-defence. This is not a difficult task, for it is simply written and not without interest. We learn, for example, that an average heart, working for 70 years, expends as much force as would be necessary to lift the biggest battleship afloat 14 ft. out of the water. This captures the imagination and spurs the reader on. The purist may be momentarily halted by the description of the heart's sounds as "Ka-chunk . . . Ka-chunk" when he is hopelessly prejudiced in favour of "loob-dupt"; but he is bound to concede the triviality of the objection, and is soon absorbed in the marvels of cardiac surgery. Next comes a chapter on road blocks of the heart (coronary disease). Here a patient with coronary thrombosis will find that he should have been treated with papaverine, atropine, and aminophylline at once, nursed in an oxygen tent, and given anticoagulants; and he may be expected to demand why he did not receive this service from the State. Angina pectoris is described accurately, so that we can no longer rely on the layman's ignorance of the site of cardiac pain.

There are helpful chapters on rheumatic fever by Duckett Jones, on high blood pressure by Irvine Page, and on peripheral vascular disease by Irving Wright; David Rutstein has a few words to say on preventive medicine, and H. M. Marvin concludes by exposing some of the common fallacies about the heart.

As Paul White states in the foreword, "Never before has there been assembled under one cover for the layman such a wealth of accurate and useful cardiovascular information written in a clear and simple style." The American public are likely to exhibit a keen avidity for the facts revealed here. In England the man in the street is perhaps less concerned with his health. The English doctor is therefore likely to suffer least.

PAUL WOOD.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

Medical and Nursing Dictionary and Encyclopaedia. By E. Pearce. 10th ed. (Pp. 723. 18s.) London: Faber and Faber. 1950.

Steroid Hormones and Tumors. By A. Lipschutz, M.D. (Pp. 309. 46s. 6d.) London: Baillière, Tindall and Cox. 1950.

Tumors of the Head and Neck. By G. E. Ward, M.D., D.Sc., F.A.C.S., and J. W. Hendrick, M.D., M.S. (Pp. 832. 114s.) London: Baillière, Tindall and Cox. 1950.

Bandersnatch. By T. E. Ryves. (Pp. 299. 10s. 6d.) London: The Grey Walls Press. 1950.

Soviet Psychiatry. By J. Wortis, M.D. (Pp. 314. 38s. 6d.) London: Baillière, Tindall and Cox. 1950.

Exercises in the Bath. By T. R. Togna. (Pp. 67. 6s. 6d.) London: The Caxton Press. 1951.

Cytology and Cell Physiology. Edited by G. H. Bourne, D.Sc., D.Ph. 2nd ed. (Pp. 524. 50s.) London: Geoffrey Cumberlege. 1951.

Transactions of the XIIth British Congress of Obstetrics and Gynaecology. Edited by A. W. Bourne, F.R.C.O.G., and Professor W. C. W. Nixon. (Pp. 304. 50s.) London: Austral Press. 1950.

Encyclopedia of the Eye. By C. Berens, M.D., F.A.C.S., and E. Siegel, M.A., M.D. (Pp. 272. 40s.) London: J. B. Lippincott. 1950.

The Chemist and Druggist Yearbook, 1951. (Pp. 642. No price.) London: Chemist and Druggist. 1951.

Essays in Applied Psycho-analysis. By E. Jones, M.D., F.R.C.P. Vol. 1. (Pp. 333. 21s.) London: Hogarth Press. 1951.

Freedom and Catholic Power. By P. Blanshard. (Pp. 318. 16s.) London: Secker and Warburg. 1951.

Preventive Medicine and Public Health. By F. Grundy, M.D., M.R.C.S., D.P.H. (Pp. 299. 18s.) Luton: The Leagrave Press. 1951.

The Life and Times of Gaspare Tagliacozzi, Surgeon of Bologna, 1545-1599. By M. T. Gnudi and J. P. Webster. (Pp. 538. $15.) New York: Herbert Reichner. 1950.

Recovery from Aphasia. By J. M. Wepman, Ph.D. (Pp. 276. $4.50.) New York: The Ronald Press. 1951.

Medical Psychology. By G. K. Yacorzynski, Ph.D. (Pp. 535. $6.) New York: The Ronald Press. 1951.

Handbook of Child Guidance. Edited by Dr. Ernest Harms. (Pp. 751. $6.) New York: Child Care Publications. 1947.

Contribución al Estudio del Rabdomioblastoma. By Dr. R. A. Zamora. (Pp. 82. No price.) Barcelona: Librería de Ciencias Médicas. 1950.

Die Chirurgische Therapie des Magen-Duodenal-Ulcus. By Professor F. Spath. (Pp. 156. 25s.) Vienna: Springer. 1950.

Taschenbuch der Anatomie. By Professor H. Voss and Dr. R. Herrlinger. Vol. 2. (Pp. 340. M. 12.) Jena: Gustav Fischer. 1950.

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SLIMMING BY TELEVISION

Daniel Lambert, at the height of his corpulent career, weighed 52 stone at the age of 36, and measured 9 feet 4 inches round the waist. When he died at the age of 39 the undertakers had to remove a window and one wall of his room to admit the coffin. Every schoolboy knows that Julius Caesar, at least according to Shakespeare, feared only those who were thin. The fat probably, he concluded, were dangerous only to themselves. These two historical examples of the rights and wrongs of obesity have been added to by the compilers of mortality tables, and the general conclusion is that while the fat may have a merry life it is likely to be a short one. As Dr. A. H. Douthwaite pointed out in a recent article in the *Journal*[1]: "The belly measurement catches up the chest circumference, then passes it, and within a year or two that ominous bulge which hides the feet from the victim's eyes presents a signal which if disregarded may spell disaster." There is the risk of post-operative embolism and pulmonary collapse; of diabetes; of hypertension; of osteoarthritis; of bronchitis; of various skin diseases—not to mention the strain on an ageing heart. Dr. Douthwaite discounts endocrine disorder as having much importance, and stresses that the principal line of treatment must be dietetic.

During the past weeks obesity has hit the headlines in the popular newspapers. The cause of this is the B.B.C. television demonstration of the effects of a slimming diet on some stout-hearted women who are prepared to sacrifice themselves for the common good. As one newspaper put it: "Miss Plump had her most embarrassing moment yesterday when she stood in front of a T.V. camera to show her generous curves to thousands of women viewers." The effect of this on the televiewing public is little less than startling if we are to credit a newspaper report a week ago that more than 44,000 viewers have applied for the television diet sheet on slimming which the B.B.C. has promised to send to applicants. The diet sheet was apparently not available on the day of this report—March 16.

While we may be sure that the B.B.C. has taken the best medical advice before starting this somewhat curious experiment, the medical profession is no doubt asking itself whether the correction of a disorder of the body's metabolism is something which can safely be prescribed for direct to the public over the heads of the practising doctor, and particularly of the general practitioner, to whom such patients normally go for advice. In a letter to this week's *Journal* the Secretary of the British Dietetic Association points out that it is a principle of her profession "that no dietary advice should be given without specific instructions from the patient's doctor," and adds that "no printed diet sheet should ever be handed out, moreover, without an interview during which the dietitian satisfies herself that the patient has understood the principle of the regime, that it is within his means, and that it is suited to the social conditions under which he lives." This is one of the sensible regulations under which these highly qualified medical auxiliaries do their work. The medical profession is likely to share the apprehensions of the Secretary of the Dietetic Association. The question is whether it is wise or desirable to treat any condition by what might be described as an illustrated correspondence course. This, in effect, is what the B.B.C. is doing. The purist no doubt would deny that obesity is a disease. But if it is not a disease it is certainly a departure from normal health, and the treatment of such a condition by restricting the diet to 1,000 calories a day in ignorance of the social and economic position of the 44,000 starvationists, and in ignorance, in particular, of any other physical disorder which these obese sufferers may have, is a situation which the Secretary of the British Dietetic Association is justified in describing as potentially dangerous.

As the B.B.C. instruction sheet is not available, it is not known at the moment of writing what kind of advice it is prepared to give, but in anticipation of this the daily press is only too ready to meet the hunger and thirst of the obese for information. For example, Dr. Stephen Taylor, who has high repute as a popular medical journalist, and is conducting a one-man campaign against fatness in the *News Chronicle*, writes[2]: "There is one essential preliminary—a visit to your doctor." This is, of course, the proper professional line to take. But what about the position of the doctor to whom the visit is recommended? He is in effect being told in advance that a certain course of treatment has been prescribed and then is left with the invidious task of saying whether or not his patient should adopt a regime which has been prescribed by someone else. Dr. Taylor goes on to tell his readers what things they should eat and what things they should not. We do not challenge the

1 *British Medical Journal*, February 10, 1951, p. 291.
2 *News Chronicle*, March 12, 1951.

soundness of this advice or that of the B.B.C.; but if in effect the general practitioners of this country are being asked, so to say, to underwrite someone else's dietetic policy, they will have reason to protest. Dr. Taylor ends the article to which reference has been made by pointing out that the diet he advocates is on the low side for vitamins A and D, adding, "That is why I suggested a word with your doctor on the subject of vitamin supplements before you start." It may be imagined that the Ministry of Health will have to consider whether such vitamin supplements are to be regarded as medicines to be issued free of charge under the National Health Service, or whether they should be looked on as a form of concentrated food suitable for those enjoying a certain diet. The drug bill for the nation is already grossly inflated, and it would seem but common sense to expect that the fat, who eat too much, should pay for their folly and not expect the taxpayer to do it for them.

The B.B.C. is probably only now beginning to be aware of the growing implications of this novel and much publicized experiment in the treatment of a human failing. Obesity is a borderline case between health and disease, and the undoubted appeal of the B.B.C. enterprise may whet the appetite of both it and the public for a similar experiment which may cross the borderline. For that reason alone, the medical profession will want to watch the results of this experiment very closely.

TOXIC CHEMICALS IN AGRICULTURE

Numerous Acts of Parliament and a multitude of regulations have been designed for the protection of workers in industry. A large medical and chemical inspectorate exists to enforce the provisions of these Acts, though perhaps the most valuable duty of the inspectors is to act as advisers to those who wish to know how to protect the workers in the factories under their control. Two minute sections of these Acts impinge upon the life of agricultural workers: they concern design of chaff choppers and threshing machines. The health of the agricultural worker, though perhaps menaced by defects in sanitation, was singularly free from risk of chemical poisoning when dung, lime, or superphosphate were the materials distributed over fields and crops. Sprays containing nicotine have been used for years in horticulture and fruit growing. Every adult has probably experienced the first symptoms of nicotine poisoning, and the devastating nausea which comes on a few minutes after the absorption of a toxic dose is enough to make most seek the refuge of fresh air and would stop them working. Fortunately the symptoms rapidly pass off, and a tolerance is soon acquired. This tolerance has some practical importance, because it is the custom for nicotine concentrates to be mixed and diluted in the field only by workers who are also smokers. The non-smoker will get symptoms of poisoning if he bends over the tubs in which the mixing takes place.

New and more poisonous materials are being used on an ever-increasing scale as the technology of agriculture advances hand-in-hand with developments in applied entomology. These advances in technique and the wider use of chemicals on food crops may carry possible dangers to the consuming public, while very real dangers face the worker who has to handle these chemicals. These hazards were described in a characteristically forthright manner by Hunter in the Ernestine Henry lecture published in this *Journal* last year.[1] Meanwhile legislation similar to the Factories Acts to cover agricultural workers is urgently needed, as the Gowers Committee[2] appreciated. This country has been fortunate in avoiding the over-enthusiasm and carelessness that accompanied the introduction of some of these materials into the United States. The Association of British Insecticide Manufacturers has voluntarily controlled the type of preparation used—for example, avoiding any powdered compositions of the new organo-phosphorus insecticides—and refusing to make preparations containing "parathion" available to the retail trade. It would be most unwise if any manufacturer should now introduce new and relatively untried compounds for sale direct to amateur gardeners.

How dangerous are these chemicals? Dinitro-ortho-cresol and related dinitro-phenol derivatives are used as weed-killers, and seven men applying them in the field have died during the past five years in Great Britain. A few cases of poisoning, none fatal, have been reported among the men handling parathion,[3] which with T.E.P.P. (tetraethyl pyrophosphate) and "schradan" (octa-methyl pyrophosphoramide) comprise the group of organo-phosphorus derivatives used as insecticides. Elsewhere in this issue we publish a statement recently issued by the Ministry of Agriculture on the precautions to be taken when these toxic chemicals are used in agriculture. Most cases of nicotine poisoning have been the result of carelessness, such as neglected splashes on the clothing with subsequent absorption through

1 *British Medical Journal*, 1950, **1**, 449 and 806.
2 *Health, Welfare, and Safety in Non-industrial Employment*, 1949. H.M.S.O., London.
3 Milles, H. L., and Salt, H. B., *British Medical Journal*, 1950, **2**, 444.
4 Judah, J. D., and Williams-Ashman, H. G., *Biochem. J.*, 1951, **48**, 33.
5 Hofmann-Credner, D., and Siedek, H., *Klin. Med.*, 1949, **4**, 361.
6 Pitt-Rivers, R., *Physiol. Rev.*, 1950, **30**, 194.
7 Grob, D., Garlick, W. L., and Harvey, A. M., *Bull. Johns Hopk. Hosp.*, 1950, **87**, 106.
8 McCance, R. A., *Proc. R. Soc. Med.*, 1950, **43**, 272.
9 Koster, R., *J. Pharmacol.*, 1946, **88**, 39.
10 Harvey, A. M., *et al.*, *Bull. Johns Hopk. Hosp.*, 1947, **81**, 267.

the skin. Future accidents among those who handle the new materials will probably also be mainly due to carelessness. There is a danger, therefore, that by wrapping the workers up from head to foot in protective clothing and giving them respirators they may come to believe that all the necessary precautions have been taken. The main emphasis must be on active measures to prevent contamination, so that containers are handled carefully and their contents kept in their proper place. A spout to a drum containing a concentrate and a jug with a spout and handle as a substitute for a jam-pot to distribute the material are examples of simple practical measures. It would be unreasonable to expect anyone to work for 10 hours in full protective clothing including rubber boots, aprons and gloves, and a respirator on a hot June day. Protective clothing must be worn when the contamination of the clothes and skin is inevitable, as in the case of men spraying closely planted trees in an orchard where the dripping from the trees cannot be avoided. Active supervision is needed to see that men in the field pay proper regard to atmospheric conditions, especially wind direction, in planning their work; such considerations, and no other, should determine the directions in which a tractor crosses and recrosses a field during spraying. While cleanliness is always desirable, it is the duty of an employer to supply the facilities. It is useless to put the onus of having a daily bath on an agricultural worker who might have to raise all the water from a well and heat it in a kettle.

Last summer the Minister of Agriculture appointed a working party, under the chairmanship of Professor Zuckerman, to recommend how the safety of workers using toxic substances in agriculture could be ensured. The working party has submitted its report, and presumably it will be published shortly. In the meantime the Minister, in accordance with one of the recommendations in the report, has asked the British Medical Association to draw the attention of doctors to the possibility that cases of poisoning may occur during the spraying season (April–September), and Council has agreed that a letter giving expert guidance on the subject be sent to all general practitioners, consultants, and medical officers of health. It is obviously important that residents in hospitals should be acquainted with the signs of poisoning, and the Ministry of Health is sending out information through the senior administrative medical officers.

The early symptoms of D.N.O.C. poisoning are varied—sweating, thirst, weakness, and insomnia. Complete collapse may come on rapidly and the signs resemble those of a hyperthyroid crisis: death may take place within a few hours. There is no known remedy that will arrest or reverse the metabolic disturbances caused by D.N.O.C. Recent biochemical work has shown that this substance interferes with the synthesis of the important compounds containing energy-rich phosphate bonds essential for many metabolic processes, so that it becomes necessary for the body to use more and more oxygen to synthesize the same quantity of these essential metabolites.[4] While little can be done to treat cases of acute D.N.O.C. poisoning beyond rest and general supportive measures, those cases that recover do so rapidly and completely and no permanent damage is done. No specific prophylactic measures are known, for the experimental observation that thyroidectomized animals are more resistant to D.N.O.C. is hardly relevant. Claims that thiouracil is of benefit in cases of acute poisoning with D.N.O.C. rest on very slender experimental evidence,[5] and consideration of the mode of action of these compounds provides no theoretical support for such a belief.[6]

The organo-phosphorus insecticides inhibit the enzyme that destroys acetylcholine. Acetylcholine is being continually produced in normal muscle, glands, brain, and nerves, and its physiological activity depends upon the ability of the tissues to synthesize and destroy it within fractions of a second. Studies *in vitro* have indicated that some members of this group of compounds irreversibly inactivate the enzyme, but later work has shown that the tissues can reverse this action to some extent within quite a short time, although the full return of the active enzyme throughout the body may take days or weeks. These observations have an important bearing upon treatment. Death seems to result from respiratory failure, due possibly to the absence of cholinesterase at the myoneural junctions of the diaphragm. If artificial respiration is given to tide an animal over a period of anoxia that would otherwise be fatal, the diaphragm may resume its function within a period of minutes. On the other hand, until there has been a more or less complete restoration of cholinesterase in the body the victim will remain more susceptible to the action of these poisons. Successive doses may gradually reduce a man's reserves of this enzyme, so that he may be finally and fatally poisoned by a dose which would have little effect on a healthy man. D.N.O.C. is only cumulative when doses follow one another in rapid succession in periods of hours and not days.

Acetylcholine stimulates glands and smooth muscle everywhere, and this effect can be prevented and reversed by atropine. Atropine must be given in repeated large doses to those poisoned by these insecticides. It will relieve the bronchospasm and diminish

the bronchial secretions and so assist respiration. Acetylcholine persisting at the myoneural junctions (in the absence of cholinesterase) causes muscular paralysis: this effect is not reversed or prevented by atropine, hence the need for artificial respiration in severe cases. Unfortunately some of these compounds also have serious and much less well understood effects upon the central nervous system. Atropine is effective to some extent only in preventing or reversing these effects of acetylcholine on the brain. Clinical reports from the U.S.A. contain one or two references to cases of poisoning that survived the acute episodes of respiratory embarrassment and were apparently recovering when they suddenly relapsed again into a fatal coma despite treatment with atropine.[7] It is doubtful whether any seriously poisoned human being has yet been treated with too much atropine, and poisoned animals become so resistant to the action of atropine that in a serious case of poisoning in man it would seem worth running the risks and giving very large doses—for instance, 0.1 mg. per kilo of body weight. The danger of giving too much atropine would be greater during the treatment of *suspected* cases of poisoning, because the early symptoms—such as headache, abdominal pain, and nausea—might be due to indigestion or food-poisoning. Thus differential diagnosis is important. There is an excellent laboratory test by which the amount of cholinesterase in the blood can be determined, and it is known that in both man and animals symptoms of poisoning will appear only after this amount of enzyme has fallen to less than 30% of the normal value. Any person with a normal blood cholinesterase level is not suffering from poisoning by these insecticides unless they have purely local symptoms, such as contraction of the pupil, possibly with a headache caused by exposure to a mist or accidental splashing or rubbing of the material in the eye. Unfortunately the determination of the blood cholinesterase is still carried out almost entirely in research laboratories. It has not yet become a routine clinical laboratory test. Fortunately there have been developed simpler and more rapid methods to replace the more elaborate one depending on the use of the Warburg respirometer, and it is to be hoped that these new methods will soon find their place in the clinical laboratory.

The observed relationship between cholinesterase levels and the nutritional state suggests other uses for this method in clinical practice.[8] No practical method of preventing cholinesterase inhibition by the organophosphorus insecticides is known. Animals can be protected by the administration of the reversible inhibitor eserine (physostigmine).[9,10] But this is only a prophylactic step, and eserine must on no account be given after exposure to the irreversible inhibitors (parathion, etc.), because its action is greatly enhanced and a dose normally well below the lethal dose will prove fatal.

These new agricultural "tools" have come to stay, though they may be succeeded at any time by modified compounds with, it is to be hoped, a more selective toxicity to weeds and insects combined with less dangerous characteristics as mammalian poisons. The old chemotherapeutic agents all fell into disrepute because they acted on host and parasite alike. If the same attention is paid to the metabolism of weeds and insects as has been devoted to that of bacteria, there seems no reason to doubt that the future will see the use of insecticides as harmless to man as penicillin.

TOXIC EFFECTS OF STREPTOMYCIN

The toxic effects upon the eighth nerve system, in particular upon its vestibular portion, are a well-known and particularly unwelcome complication of streptomycin therapy. The practical problems to which it gives rise are varied and pressing, and to some only of these have solutions been so far provided. Perhaps the most pressing is that of dosage—whether or not an upper limit of dosage can be determined which permits a therapeutic effect without its toxic complication. A satisfactory answer to this question has been provided by Keefer,[1] and by Fowler and Feind[2] in the U.S.A., by Hydén and his co-workers[3] in Sweden, and by the M.R.C. research group in this country,[4] and in last week's *Journal* further valuable information was presented by Bignall, Crofton, and Thomas working at the Brompton Hospital. Their conclusion, upon which there now seems to be general agreement, is that a daily dosage of 1 g. in the adult, while therapeutically adequate, will be unlikely to cause vestibular symptoms, and, further, that these will be slight when they do occur. An interesting feature of the work of Bignall and his collaborators was their attempt to combat both the vestibular paralysis and the nausea which accompanies it by the use of antihistamine drugs. According to Fowler and Feind, the use of these drugs delays the onset of vestibular dysfunction; furthermore, preliminary desensitization with small increasing doses of streptomycin may prevent its occurrence altogether. The Brompton Hospital workers describe their own evidence upon this important point as suggestive but not conclusive.

The pathology of the toxic effect has attracted the attention of a large number of investigators.[5-10] All

1 *J. Amer. med. Ass.*, 1946, **132**, 70.
2 *Acta oto-laryng., Stockh.*, Suppl. 78, 1949.
3 Ibid., Suppl. 75, 1947.
4 *British Medical Journal*, 1950, **2**, 1073.
5 Winston, J., Lewey, F. H., Parenteau, A., Marden, P. A., and Cramer, F. B., *Ann. Otol., etc., St. Louis*, 1948, **57**, 738.
6 Dix, M. R., *J. Laryng.*, 1948, **62**, 735.
7 Dix, M. R., Hallpike, C. S., Harrison, M. S., *Brain*, 1949, **72**, 241.
8 Glorig, A., and Fowler, E. P., *Ann. otol., etc., St. Louis*, 1947, **65**, 86.
9 Caussé, R., Goudet, I. C. R., *Acad. Sci., Paris*, 1949, **228**, 1253.
10 Rüedi, L., Furrer, W., Escher, F., Lüthy, E., *Acta oto-laryng. Stockh.*, Suppl. 78, 1949.

of these made microscopic examinations of the labyrinths and the eighth nerves and their central connexions in guinea-pigs and other laboratory animals after the administration of streptomycin. In some cases changes have been found in the vestibular nerves and nuclei, the labyrinth being described as normal. In other cases, however, the main pathological changes have been found in the labyrinth without significant involvement of the nerves or nuclei. This divergence of evidence is difficult to explain, and it seems to depend on certain complex variables connected with the type of experimental animal used, the impurities in the streptomycin, and other factors. It seems clear that no final answer to the problem will be given until further investigations have been completed in which closer attention is devoted to the control of these experimental difficulties. On clinical grounds it certainly seems likely that the central vestibular connexions are at any rate included in the toxic effect, since the ataxia, which is one of the results of streptomycin intoxication, has a persistent character which is by no means typical of purely labyrinthine disease.

RESTORATION OF MENTAL HEALTH

The new rehabilitation aftercare centre opened in London by the Minister of Health last week (see p. 639) is an attempt by the Institute of Social Psychiatry, aided by the North-west Regional Hospital Board and the London County Council, to bridge the awkward gap between hospital treatment and organized aftercare—functions under the National Health Service Act of regional hospital boards and local health authorities, respectively. It is refreshing to find voluntary bodies ready to meet this need. The centre, which is in Blackfriars and will serve a large population, is for patients referred by psychiatrists from out-patient clinics or from hospitals; most will be psychoneurotics, but some psychotics will be suitable for this process of readjustment. They will be employed in one or other of many different activities for five days a week—a positive approach, in place of the negative and damaging uselessness and drift which is too often the lot of the recovering patient. As the Minister said, the success of the centre will depend on the help it receives from the neighbourhood and from other well-wishers. It may retard local interest and possibly discourage patients if, as appeared possible, they have to be sent by their doctors to the Institute in Hampstead for an interview before being accepted. No doubt this difficulty will be overcome as the centre settles down. The next development will be the establishment of residential hostels for the same purpose as the new day centre. It has been announced that these are already being planned. There are, of course, both rehabilitation centres and aftercare centres already in existence for patients who have been having psychiatric treatment. In both, and more particularly the former, there is now much emphasis being laid on social rehabilitation, as well as mental and physical, and a great deal of the success of the centres is due to this somewhat intangible therapy. Both are, however, generally residential and thus cannot cater for the individual who, for domestic or economic reasons, or because of his personality, is more suitably treated at home. Sometimes the abrupt transition back to work may be too much for patients recently discharged from hospital. The residential rehabilitation centre, however well planned, is inevitably somewhat of a shelter; factories, and sometimes homes, are not. For these patients, then, the new type of centre opened last week enables rehabilitation to be carried on at the same time as they are making their adaptations either to the old environment or to a new one.

THE BED-PAN IN DISREPUTE

The sudden tragedy of the hospital patient who "calls for the bed-pan and dies" is not uncommon. It has sometimes been assumed that the call to stool is an agonal reflex, but it is also known that straining at stool can cause changes in the circulation which may be dangerous to the patient. In reviewing the necropsy records of the Cincinnatti General Hospital McGuire and his colleagues[1] were able to trace the details of 11 patients who had died on the bed-pan. Ten of these patients had organic heart disease, the immediate causes of death in four being dissecting aneurysm, subarachnoid haemorrhage, myocardial infarction, and pulmonary embolism. The reactions of a number of normal subjects to deliberate vigorous straining were also studied. It was found that the blood pressure rose as soon as straining was begun, but when straining was maintained the blood pressure fell to levels well below normal, the systolic pressure falling more than the diastolic. On relaxation there was an instantaneous further drop in the blood pressure. This was followed by an "after-fling" during which the systolic and diastolic pressures rose to high levels; thereafter the pressure fell to normal again in about 30 seconds. As the authors point out, it is probable that the fall in blood pressure at the end of straining would precipitate intravascular clotting and that the fluctuations in intravascular pressure would tend to dislodge venous thrombi. Electrocardiographic examination during straining showed an initial slowing of the pulse rate followed by tachycardia. The pulse slowed again at the end of the period of bearing down. Nodal ectopic rhythm developed in about one-third of the patients examined. The changes in the pulse rate and the ectopic disorders of rhythm could be abolished by giving atropine. It is reasonable to suppose that straining on the bed-pan can cause untimely death.

Benton, Brown, and Rusk[2] have recently shown that patients expend much more energy on the bed-pan than on the bedside commode. They determined by means of a closed-circuit respirometer the amount of oxygen consumed (in excess of resting) by patients and others who simulated the process of defaecation. In 15 patients with cardiac disease the amount of oxygen consumed above that at rest was 50% more on the bed-pan than on the commode in standardized conditions. There are other drawbacks to

1 *Amer. Practit., Phila.*, 1950, **1**, 23.
2 *J. Amer. med. Ass.*, 1950, **144**, 1443.
3 McClean, D., *Lancet*, 1946, **1**, 834.
4 Ibid., 1947, **2**, 509.

the use of the bed-pan. Doctors who have themselves been patients confirm that one of the things most dreaded about hospital treatment is the necessity for this utensil.[3] Few nurses can face the bed-pan round with equanimity, and the cleansing and sterilization of bed-pans create problems of ward hygiene. For some patients of course there is no alternative, but a few hospitals are now using hollow-seated wheel chairs, similar to that designed by Bohmansson and Malmros,[4] in which the patient can be wheeled over the lavatory pan, where he defaecates in the sitting posture. Such chairs obviate most of the drawbacks of the bed-pan, and there is now less reason to persist in the use of this uncomfortable utensil.

STATUS OF B.C.G. VACCINATION

The recent report[1] on the status of B.C.G. vaccination by the Council on Pharmacy and Chemistry of the American Medical Association affords an opportunity to compare the British and American attitude to B.C.G. This report supports the earlier statement[2] issued by the American Trudeau Society, and its broad conclusions are that B.C.G. is harmless; that the degree of protection afforded is not complete, nor is its duration predictable; that an appreciable reduction in the incidence of clinical tuberculosis may be anticipated when certain groups of people who are likely to develop tuberculosis because of unusual exposure, inferior resistance, or both, are vaccinated; and that B.C.G. vaccination must not be regarded as a substitute for public health practices. Both countries are agreed that B.C.G. can do no harm. Both admit that it probably affords some protection, though neither is prepared to commit itself as yet to mass vaccination. In Britain vaccination is confined to nurses, medical students, and contacts. In the U.S.A. it is also recommended for use in "prisons and other custodial institutions" where the incidence of tuberculosis is known to be high and for "children and certain adults considered to have inferior resistance and living in communities in which the tuberculosis mortality rate is unusually high." The Council on Pharmacy and Chemistry leaves the decision of its use to "those local and State health officials and other authorities who consider the use of the vaccine sufficiently established to warrant its employment in selected groups of tuberculin-negative persons unduly exposed to tuberculous infection." The Ministry of Health and the Department of Health for Scotland have taken the more positive line, not only of making a national supply of vaccine available, but of definitely sponsoring B.C.G. vaccination of all tuberculin-negative nurses, medical students, and contacts throughout this country. It is possible that the more dynamic attitude in Britain is due to the fact that, in the opinion of those who should know, "the inadequacy of the present provision for the diagnosis, treatment, and after-care of tuberculosis in this country is a national scandal."[3]

[1] *J. Amer. med. Ass.*, 1950, **144**, 1260.
[2] *Amer. Rev. Tuberc.*, 1949, **60**, 681.
[3] Report of the Tuberculosis and Diseases of the Chest Group Committee of the B.M.A., 1950. See *British Medical Journal*, 1950, **2**, 1382.

FELLOWS OF THE ROYAL SOCIETY

Among the Fellows elected to the Royal Society on March 15[1] are three medical men who have achieved great distinction, Professor J. S. K. Boyd, Dr. A. Neuberger, and Dr. T. R. R. Mann—as well as others who have made important contributions to the advancement of medical science.

Professor Boyd is the director of the Wellcome Laboratories of Tropical Medicine. Among his many outstanding researches into the pathology of tropical diseases are his investigations into dysentery, the typhus fevers, and tetanus. His work has led to great improvements in methods of diagnosis and control. He described the last "50 Years of Tropical Medicine" in the special number of this *Journal* of January 7, 1950. Dr. A. Neuberger works at the National Institute for Medical Research and is a member of the editorial board of the *Biochemical Journal*. His research up to the war was concerned mainly with the structural chemistry of proteins, dissociation constants of amino-acids, and chemistry of amino-sugars. Since the war he has become interested in the metabolism of amino-acids and problems of protein nutrition. Dr. T. Mann is an authority on enzymes, particularly of the blood and semen. Among the non-medical men is Dr. H. R. Ing, who is secretary of the editorial committee and press editor of the *British Journal of Pharmacology and Chemotherapy*. He is reader in pharmacological chemistry in the University of Oxford, and formerly held a similar position at University College, London. During 1939–44 he was an experimental officer of the Ministry of Supply, engaged mainly on research problems concerning the defensive aspects of chemical warfare. He is a chemist who has specialized in the study of the relations between the chemical structure and the properties of drugs and their pharmacological properties. Dr. S. J. Folley has been a member of the staff of the National Institute for Research in Dairying since 1932, and during the last 10 years he has become widely known as one of the world's leading authorities on the endocrine control of lactation and reproduction. As a Rockefeller Foundation Fellow in 1938 he spent some time in the laboratory of the late Edgar Allen at Yale. Dr. Folley is the secretary of the editorial board of the *Journal of Endocrinology*.

The Trustees of the Dawson Williams Memorial Fund, at a meeting on February 13, decided to award the Dawson Williams Prize (consisting of a cheque for £75) in 1951 to Dr. Harold K. Waller, of Tunbridge Wells, in recognition of his original contributions to the clinical study of lactation and infant feeding. The presentation will be made by the President of the B.M.A. at the Adjourned Annual General Meeting in London next June. The last awards were made to Sir James Spence and Professor Alan Moncrieff.

[1] See p. 640 for full list.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

ENLARGED PROSTATE

BY

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In Great Britain the age of maximum incidence of prostatic obstruction needing surgical treatment is between 60 and 70; it is unusual for operation to be required before the age of 55. While the education of the public on the dangers of delay has not yet eliminated the patients with chronic retention seeking treatment at a late stage, it has brought forward many men of about 50 with minimal symptoms who think they should have a prostatectomy; they should be treated expectantly, seen regularly, and not submitted to operation until their symptoms and signs warrant it. The removal of a normal prostate, whether by open or perurethral operation, is fraught with danger just as is the surgical treatment of the neglected case with renal dilatation.

Clinical Features

The time to advise surgical treatment should be based on an assessment of both symptoms and signs. As an *alteration in the act of micturition* is one of the earliest features of the disease it is important to watch the patient pass urine; with patience and a running tap this can usually be done. A slow vertical stream with delay in starting, intermission, and terminal dribbling is a better indication of obstruction than any verbal description, while a stream of good projectile power is usually an indication that prostatectomy is not yet needed.

Increased frequency of micturition is the symptom which disturbs the patient more than any other. The fact that he has to void twice in the night is not of itself sufficient to justify operation unless other symptoms or signs are present, but if his rest is disturbed and his daytime habits are regulated by his bladder it is time to operate if the prostate is enlarged.

Pain is usually absent, and its occurrence should arouse the suspicion of a stone or infection; the presence of the former and an enlarged prostate is an indication for the removal of both. The persistence or recurrence of infection after suitable antibiotic treatment is also usually an indication of the need for surgery.

If *haematuria* occurs its cause must always be investigated; carcinoma of the bladder occurs in the same age group as enlarged prostate.

Rectal examination still provides the most reliable physical sign upon which the diagnosis is based. It should be done after micturition, when some idea of the amount of residual urine may be obtained; the best position for the patient is lying on his back, with the hips and knees flexed and the legs separated. He is comfortable and can relax, and the examiner can feel the prostate with the pulp of his finger without the contortion necessary when the left lateral position is adopted. With the left hand pressed into the hypogastrium a bimanual examination can be made and sometimes the size of an intravesical projection can be estimated. Backward projection of the prostate into the rectum is easily felt, but increase in the width of the gland must also be tested by passing the finger from side to side. The consistence of the prostate in benign hypertrophy is about the same as that of the thenar muscles with the thumb outstretched; firmer nodules may indicate fibrosis, stones, or malignant disease. Fibrosis is usually diffuse, while stones are multiple and may crepitate; the early diagnosis of carcinoma of the prostate may be difficult, though by the time the patient comes for examination there is usually enough induration together with signs of infiltration into the lateral sulci and fixity to make it certain. True tenderness is more often present in carcinoma than in benign hypertrophy.

A general physical examination must also be made, with particular reference to the cardiovascular system. Cerebral arteriosclerosis with sluggish mentality is a most serious factor in this disease. A limited examination of the nervous system should serve to exclude tabes dorsalis. Palpation of the abdomen will show an enlarged bladder or tender kidneys, and a routine examination of the urine must not be neglected. A crystal-clear urine shows the absence of gross infection, and a high (1020) or low (1002) specific gravity indicates the absence of serious renal impairment. A fixed specific gravity of 1010 is a sign of serious renal damage, and the presence of albumin in the absence of pus is also a danger signal. The precise amount of residual urine is not of any great value in deciding upon the line of treatment, and it is probably better to avoid instrumentation until the cysto-urethroscopy which immediately precedes operation.

Differential Diagnosis

Frequency of micturition with pain may be caused by simple cystitis, which should clear up with proper treatment. If there is evident obstruction but no enlargement of the prostate to be felt on rectal examination a stricture should be suspected; in such a case it is justifiable to pass a bougie. Neurological causes may mimic prostatic obstruction, in particular tabes and sometimes disseminated sclerosis. Haematuria may be due to new growth of the bladder or kidney; an apparent source of bleeding from the prostatic margin on cystoscopy must always be suspect, and if the bladder is otherwise clear full radiological investigation of the kidneys should be carried out. An asymmetrical suprapubic swelling may be caused by a diverticulum of the bladder, present as a complicating factor.

Complications

Infection and stone formation have already been mentioned as possible sequelae of prostatic obstruction. Infection is serious and makes the prognosis for complete cure worse; it is largely for this reason that preoperative instrumentation is avoided so far as is possible. The obstructed bladder with residual urine is a fertile field for the growth of organisms which may be introduced on catheterization. The most important complication, however, is retention of urine, which may be acute or chronic.

Acute retention is a painful condition. It is brought on by any cause of increased congestion, and among the foremost is the enforced avoidance of the act of micturition when the call comes. A long railway journey in a train with crowded corridors is still a frequent source of trouble; a long car journey on a cold day in the presence of ladies is another. Constipation or, more rarely, diarrhoea, alcoholic or sexual excess, and sudden changes of temperature such as going from a hot dining-room into the cold night air are often culpable.

In chronic retention the amount of residual urine gradually increases and the bladder becomes decompensated and distended until urine escapes only by overflow incontinence. The ureters and renal pelves dilate and there is pressure atrophy of the kidney substance with irreversible renal damage. The patient may not be aware of the large swelling in the lower abdomen, and the condition is relatively painless. There may be clinical evidence of incipient uraemia in the loss of taste and appetite, dry mouth, loss of weight, nausea, and general deterioration in mental and physical activity. This is the more dangerous state of the two, and a patient in this condition has reduced chances of successful recovery after operation. Chronic retention often supervenes on confinement to bed for some intercurrent disease.

Preliminary Investigations

In all cases it is desirable to have some test of renal function done at an early stage of the disease; the blood urea, while not the most accurate test, is safe and convenient, and gives a reasonably good idea of the degree of renal impairment.

The most informative investigation before cystoscopy is an intravenous pyelogram. Unless there is gross renal impairment—for example, blood urea of over 100 mg. per 100 ml.—it will show how soon the kidneys secrete and empty and whether there is any dilatation of the pelves, ureters, or bladder; diverticula of the bladder may be demonstrated; and it may confirm the diagnosis of enlarged prostate by indicating a filling defect in the bladder base caused by an intravesical projection (see Figure). This is not necessary for the purposes of diagnosis only, but is often the final convincing piece of evidence which the doctor can give the patient in order to persuade him to see a surgeon.

Intravenous pyelogram, 45-minute film, showing prostatic filling defect in the bladder. The kidneys are not dilated, but there is a little delay in their emptying.

The presence or nature of any infection of the urine should also be known in order that appropriate medication can be given as a cover for the operative procedure.

Treatment

There is no known drug or hormone which will prevent the prostate enlarging when once the changes of benign hypertrophy have started. Stilboestrol may have a remarkable effect in carcinoma of the prostate, but in benign enlargement it is more often a source of delay in the application of effective treatment and is therefore dangerous. The same applies to prostatic extracts. Testosterone will often improve the stream by increasing bladder tone, but it has no effect on the size or histology of the prostate. *X*-ray treatment has little effect on benign prostatic enlargement.

There is, however, a place for expectant treatment in the early cases and in those patients who have some other lesion which prohibits operation. Expectant treatment comprises regularity of micturition and the avoidance of the causes of congestion enumerated above. Occasional catheterization under stringent aseptic precautions may be necessary, but to put a patient on to self-catheterization halves his expectation of life.

The main indications for surgical treatment have already been enumerated, and if the patient presents these he should be sent to a urologist for further consideration. The general practitioner, however, may be called upon to deal with cases of retention of urine.

Management of Acute Retention

This is a painful condition, and the doctor's first duty is to relieve pain if it can be done with safety. In acute retention it is safe to pass a catheter under aseptic precautions; a gum-elastic bicoudé catheter is the most likely to pass easily, or a stiff rubber catheter of the Tiemans variety. The metal fully curved prostatic catheter is rarely needed and is a dangerous instrument in most hands. The bladder can be emptied completely and there is no need for slow decompression. The catheter should then be removed.

As an alternative to catheterization the bladder can be emptied by aspiration through a needle inserted well above the pubes in an oblique direction, downwards and backwards.

After the bladder has been emptied "normal" micturition may be restored in some cases, but the patient should still be sent into hospital for surgical treatment. One attack of retention is the precursor of others, and it is only in this way that the practice of repeated catheterization with the inevitable risk of infection can be avoided. It is advisable to give sulphonamides if catheterization is necessary.

Management of Chronic Retention

When the retention is relatively painless there is no need to empty the bladder at once; in many cases it

is dangerous to do so. It is often impossible to judge whether the condition is recent or of long standing, and the degree of dilatation of the upper urinary tract cannot be foretold on the first examination. If there is dilatation of the kidneys not only are they more susceptible to any infection which may be introduced on catheterization but the sudden release of hydrostatic pressure throughout the urinary tract may lead to such flooding of the renal venous system with blood as to produce haemorrhage into the kidney and tubular blockage. Gross haematuria occurs, and it may be followed by gradual oliguria and suppression of urine with death from uraemia. In this dangerous state of chronic retention the patient should be admitted to hospital as soon as possible. There the safest treatment is slow decompression (12 hours) by means of a suprapubic catheter; this should be a small catheter (16F), which is inserted from well above the pubes into the distended bladder under a local analgesic. It is less likely than urethral catheterization to cause ascending infection, and the catheter can, if necessary, be retained for weeks or months, with the patient ambulant, until the kidneys have attained their maximum improvement. If properly placed it does not interfere with a subsequent prostatectomy by any route.

In some clinics it is the practice to perform "immediate" prostatectomy in all cases if the urine is sterile. However, this carries a high mortality in the bad-risk cases, some of which could be avoided by preliminary drainage.

Removal of the Obstruction

The actual removal of the obstructing prostate can be carried out by open or by perurethral operation. Many patients ask for the latter method in the belief that it is only a minor operation. This is far from being the case if the prostate is greatly or even moderately enlarged. The blood loss can be greater, the complications more numerous and severe, and the ultimate perfection of result is less certain and takes longer to achieve than by open operation. In a small fibrous prostate or a localized median bar obstruction or in a malignant prostate the results of perurethral operations can be excellent; in the fully developed glandular enlargement the whole gland is better removed by open operation. The choice should be made on the type and size of the prostate rather than on the age or general condition of the patient.

The open operations in vogue are the suprapubic, retropubic, and perineal, though the last is rarely used in this country. Both the suprapubic (Harris) and the retropubic (Millin) should allow of closure of the bladder after operation and the avoidance of a suprapubic fistula. To achieve this infection must be controlled and haemostasis must be adequate; drainage is by a urethral catheter retained for a few days. If a two-stage operation has been necessary the small suprapubic catheter can take the place of the urethral catheter. It is usual to tie the vas on each side to prevent epididymitis. The average patient can be out of bed by the second day and will be ready to leave hospital in from 14 to 16 days, when the danger of secondary haemorrhage is largely past.

Recent Improvements in Treatment

The use of antibiotics has lowered the incidence of infective complications, and improvements in technique have rendered the post-operative convalescence far more comfortable. The memory of the older operations with a large drainage tube and a prolonged suprapubic fistula dies hard, and many men are still reluctant to have a prostatectomy until retention forces them to it. The modern practice gives a dry wound, and early ambulation minimizes pulmonary complications; the immediate post-operative period after prostatectomy is more pleasant than that of many clean abdominal operations. The low transverse incision interferes but little with abdominal and thoracic movements and heals readily, leaving a scar which is invisible after a few months.

The operation has changed its character completely in the past twenty years, largely owing to the pioneer work of the late Harry Harris, and is no longer one which should be postponed until infection, renal damage, and cardiovascular changes make it hazardous.

Late Complications

After the patient has left hospital he should be ready to return to work in a few weeks. There may still be some urinary infection, but it will clear up quickly if the bladder is being emptied, unless there has been prolonged pre-operative infection. As full courses of antibiotics have been given in hospital it is better to rely on one of the less potent urinary antiseptics such as hexamine during this period.

Other infective complications may occur after some weeks; occasionally epididymitis, or funiculitis if the vas has been tied, requires a further course of sulphonamide, together with rest and support. The good habit of copious drinking acquired in hospital should be only gradually discarded. Osteitis pubis is a complication which has been properly recognized only since the retropubic operation came into vogue. It occurs about six weeks after operation, and is characterized by adductor spasm and pain and tenderness in the pubes and ischiopubic rami; *x*-ray examination shows erosion of these bones. It is fortunately rare. It responds slowly to short-wave diathermy and massive doses of vitamin B.

An atonic bladder may remain as a cause of incomplete emptying if the bladder has been in a state of prolonged chronic distension before operation.

Post-prostatectomy obstruction is avoided by removing the trigone of the bladder, or stitching it down to the floor of the urethra. It may, however, still occur if the prostate was fibrous or had other evidence of chronic infection. It is treated by endoscopic resection of the bladder neck.

Meatal stricture may follow the use of an indwelling urethral catheter; it responds to dilatation or meatotomy.

Results

The healing of the prostatic bed takes from six to eight weeks, and until this is complete there will still be some nocturnal and diurnal frequency. Moreover, in the prostatic age the habits acquired before operation are hard to lose. There should, however, be a return to a youthful stream and an increase in physical and mental vigour.

After adequate perurethral resection in a suitable case the same results will be obtained ultimately, but it will take longer for the urine to become clear and free from threads. In good hands the mortality from this operation is as low as 1%, but other series show a death rate of 5 to 6%. The mortality from open prostatectomy is about 5%. In this age group many

other factors enter into the picture, and the immediate and long-term survival depends largely on the state of the cardiovascular system.

Carcinoma of the Prostate

The symptoms of carcinoma of the prostate are the same as those of benign enlargement, with the possible addition of sciatic or lumbar pain due to extension of the growth. If the diagnosis is suspected by the induration of the gland on rectal examination a sample of blood should be sent for a serum acid phosphatase estimation and a plain radiograph of the pelvis should be taken; this is the commonest site for osseous metastases, and the film will exclude prostatic calculi.

Treatment by means of oestrogens is usually effective and seems to give better results than orchidectomy. It has a better and quicker effect if any obstructing tissue is removed by endoscopic resection, and this also provides tissue for histological confirmation of the diagnosis. Of the oestrogens, stilboestrol is the most effective; it is given by mouth in doses starting with 1 mg. thrice daily and working up to 5 mg. thrice daily by the fifth day. This dose is continued for several months and, if the response is good, can be reduced gradually until an adequate maintenance dose is found; it must be continued indefinitely, as cessation of treatment is likely to be followed by a recrudescence of symptoms and the appearance of metastases.

There are some side-effects from stilboestrol; if nausea or vomiting is caused the drug should be changed to hexoestrol or dienoestrol in the same or larger dose, or to ethinyl oestradiol in doses of 1 mg. three times a day. Other side-effects are pigmentation of the areolae and enlargement of the breasts, diminution in size of the testes and penis, and loss of erections. These are small prices to pay for the control of a malignant growth, and should not be used as an excuse to stop treatment.

Prognosis.—Many patients live for five to ten years in comfort under oestrogen therapy, and the whole outlook of the disease has been altered by its introduction. Bone metastases may regress, and those in the lungs may disappear. Constant vigilance is needed to see that the dose is continued and to make any alterations which may become necessary.

Stilboestrol will not cure benign enlargement, and its speculative use in all cases of prostatic obstruction is to be deprecated. It may mask a difficult diagnosis of early carcinoma and vitiate the possible help of a raised acid phosphatase. It may, however, be used preoperatively in a case of carcinoma which is to be submitted to radical prostatectomy, but the results of this operation in general are not so good as those of conservative treatment.

A circular from the Ministry of Health to local authorities states that in wartime two types of ambulance stations should be organized—local and main. The local stations would provide first-line cover, and the main stations would be a strategic reserve for the county or county borough council. Volunteers should be encouraged to help if necessary. In an emergency the additional vehicles required will be obtained and distributed under arrangements made centrally. Arrangements for mutual aid between local authorities should be planned in detail.

A CENTURY OF PHYSICIANS

BY

Sir HENRY BASHFORD, M.D., F.R.C.P.

Between the years 1825 and 1925, excluding those still alive towards the end of 1950, 848 members of the medical profession were elected as Fellows of the Royal College of Physicians. They included many who earned renown in their own day, and not a few whose contributions to the art and science of Medicine have become major or minor landmarks. Such, for example, were William Jenner, the first to proclaim typhus and typhoid fevers as separate entities; William Gull, the first publicly to identify the condition known as myxoedema; Hughlings Jackson, David Ferrier, Mott, Gowers, and Henry Head, all pilgrim fathers in neurology; Manson, Bruce, and Leishman, giants in the field of tropical medicine; Clifford Allbutt, commemorated in every pocket clinical thermometer; James Mackenzie, the founder of modern cardiology; John Conolly, who did more than any one man to purge from savagery the treatment of lunatics; Henry Maudsley and W. H. R. Rivers, pioneers in psychiatry and anthropology; and the list is far from complete. There were also such great clinicians as William Broadbent, Andrew Clark, Dyce Duckworth, and Bertrand Dawson, and others, such as Richard Quain and William Osler, who assembled the medical knowledge of their time in books of world-wide circulation.

Honours have been paid to them all. Their portraits may be seen hanging upon the walls of college or hospital libraries and board-rooms. But rather less is known, perhaps, of the group—regarded as a group—to which they belonged. What sort of people were they? Where did they come from? How were they educated? Apart from their common profession, and—if it be accepted as such—their common distinction as Fellows of the Royal College of Physicians, in what were they alike and how did they differ? Complete answers are, of course, impossible. But perhaps the first, if it is not the most important, thing that strikes an observer of the group as a whole is the remarkable longevity of its members. In the cases of 21 of them, the necessary data are lacking. But the average age of the remaining 827 was a fraction over 70. More than a quarter of them, 224, lived to be over 80, including no fewer than 30 nonagenarians. One of them lived to be over 100, and it would surely be difficult to find a comparable body of men with such a record.

Their Parentage

Less information is at hand, especially in the case of the earlier elected Fellows, about their parentage. But, of the 422 whose fathers' occupations are known, the great majority belonged to what are usually described as the professional classes. More than a third of them, 164, were the sons of doctors, and 74 were the sons of Church of England parsons or nonconformist ministers. Another 35 were the sons of barristers or solicitors, 22 were the sons of officers in the Navy, Army, or Mercantile Marine, 16 were the sons of schoolmasters, and 11 of civil or municipal servants, 5 were the sons of architects or surveyors, 5 were the sons of professional artists or musicians, 4 were the sons of engineers, and 2 each of scientists and authors. In the non-professional section, 65 were the sons of business men, bankers,

mill-owners, shipbuilders, shopkeepers, clerks, and craftsmen. Seven were the sons of farmers, nine of landowners and country squires, and one was the son of a Cabinet Minister.

Schooling

As regards schooling, most of them seem to have been educated at local grammar schools or day schools of the grammar-school type. But the public schools can claim 248 of them. Rugby heads the list of these, with 21 future Fellows. Eton, Harrow, and Charterhouse follow with 14 apiece. Westminster was responsible for 13, Winchester and Edinburgh High School coming next, each with 11. Shrewsbury produced 9; Epsom, St. Paul's, City of London, King's College School, and University College School each produced 8; Mill Hill 7; Tonbridge, Clifton, Merchant Taylors', and Christ's Hospital 6 apiece; Marlborough, Bedford, and Brighton College 5; and almost every other public school contributed one or two to the total. But it would be hard to discern in this particular group of Fellows—at any rate from the strictly professional point of view—any overwhelming advantage accruing from a public-school education. None of the great quintet, for instance, of Victorian baronets—Gull, Jenner, Quain, Broadbent, or Andrew Clark—went to a public school in the usual sense of the term, and at least two of them were born in the humblest ranks of contemporary society; nor, among so many others, did such men as Hughlings Jackson and James Mackenzie.

The public schools, on the other hand, can be credited—again merely as a few examples—with Henry Acland, a transformer of medical education at Oxford; George Paget, his counterpart at Cambridge; Bence Jones, the physiologist; Lewis Jones, one of the first radiologists; W. H. R. Rivers; Henry Maudsley; Henry Head; Archibald Garrod, Osler's successor as Regius Professor at Oxford; Raymond Crawfurd, the regenerator of King's College Hospital and Medical School; and E. C. Perry, who did much the same both for Guy's and for the R.A.M.C., and who was one of the principal founders of the College of Nursing and the Chartered Society of Masseurs.

The University Stage

As regards the so-called older universities, 197 of these Fellows went to Cambridge and 90 to Oxford, and here another general characteristic of the group begins to declare itself. To a great extent it conforms with the view that the winning of scholarships and prizes at school is a very uncertain indication of success in later life. But in the university stage of their careers—and this is true at all the universities of which they were students—there is an almost monotonous record, in the case of these 848 Fellows, of first-class honours, gold medals, and other distinctions. It is interesting to note too—with a certain sense, perhaps, of nostalgic melancholy—how many of them supplemented their insular studies with long sojourns at such Continental centres of learning as Berlin, Würzburg, Paris, and Vienna, and how many of them were familiar with languages other than their own.

Personal Characteristics

Not only from this but from their after-histories, a high degree of scholarship and technical ability can be assumed in them all. But what sort of men were they in themselves? Fuller answers may be found in the books that have since been written about a few of them and in the shorter accounts of others to be found in the *Dictionary of National Biography*. But as regards the majority, it is upon contemporary obituaries that the inquirer must chiefly rely, and the kindly motto of most obituaries is *De mortuis nil nisi bonum*. This is particularly true, perhaps, of obituaries written by medical men—as most of these were—since the moulding of a doctor, if it tends to make him a trifle sceptical, also tends to make him tolerant or, at any rate, discreet. Read in large numbers, therefore, and in so far as they deal with personal traits, these obituaries are so alike that they might well, in almost equally large numbers, be interchangeable. The good qualities described, or selected for description, seem to have been shared by nearly all the deceased. Nevertheless, and after making every allowance, even the most debunking of historians would probably agree that the valid impression remains of a reasonably conscientious, reasonably good-tempered body of men, doing their best for their patients and living in amity with the world at large.

Recreations and Hobbies

Several of them amassed fortunes that few of their successors are likely to equal. None of them would seem to have been actually indigent. Most would appear to have been hospitably inclined, though the obituaries admit to a few recluses. Many of them, in addition to their professional activities, were members of town and county councils, justices of the peace, mayors, and occasionally Members of Parliament, and it was one of these, incidentally, who was responsible for introducing the Bill leading to the construction of the Canadian Pacific Railway. The recreations, too, of those who were wise enough to make time for them were comfortingly diverse. A scrutiny shows that fishing was the most popular, and brothers of the art will applaud the resolution of the celebrated alienist who fished for three years with a dry fly without catching a trout by that method. Music, golf, and gardening follow in close attendance, with one of the golfers still regularly playing at the ripe age of 92.

The collecting of pictures and works of art occupied the leisure of 24, and 24 were themselves painters, sculptors, or etchers, some of them attaining to the Royal Academy standard of exhibition. Twenty-three were fond of shooting, and 19 were mountaineers. Fifteen were devoted to the study and collection of antiques. Fourteen were practising organists, pianists, or skilled executants with other musical instruments; and another 14 were ornithologists or natural historians. Others were travellers, botanists, yachtsmen, or collectors of old books, stamps, and coins. Half a dozen of them were hunting-men, and some were photographers, astronomers, meteorologists, anthropologists, and archaeologists. One found an absorbing interest in the repair of watches. Another had an odd but apparently fascinating pursuit in the occupation and refashioning of houses—he dwelt in and altered eight at Oxford or near by—and there was a veteran who indulged his passion for dancing up to the age of 84, only to be surpassed by the golfer already mentioned and the Fellow who kept up his daily swimming until he was 90.

It is from a study of their hobbies, indeed, that the ghosts begin to appear of a rather more variegated company than the obituaries at first suggest, and an odd sentence or two here and there reinforce the discovery. It is pleasant to reflect, for instance, upon the Fellow

whose chief boast it was that he had worked as a builder's apprentice upon the great provincial infirmary of which he was ultimately to become a consulting physician. There is the Fellow—afterwards to be followed by another—who settled in Bournemouth at a time when it contained only 300 persons, and lived to see it, largely through his own efforts, a town of 30,000 inhabitants; and there is the Fellow from the North of England who was bold enough to take a house in Harley Street in spite of the fact that another doctor was already established there. There is the Fellow who wrote a learned treatise upon all the precious stones mentioned in the Bible, and journeyed to the island of Cos in order to identify the plane tree under which Hippocrates used to sit. There is the Fellow who married and retired at the age of 52, bought himself a house in the Lake District, and insisted upon dining every night in a velvet suit, with knee-breeches, black silk stockings, and buckled shoes. Another of them—even the obituaries cannot conceal that he was a somewhat difficult colleague, though he built up an enormous practice, ruled with a rod of iron—spent his Alpine holidays immaculately arrayed in a top-hat and frock-coat. And there was the Fellow, son of a West Country surgeon, all of whose eight brothers became doctors, five of them having previously been Wranglers at Cambridge.

A considerable number of these Fellows were distinguished athletes in their youth, and they include a Rugby international, a rowing blue, and one whose record as a hurdler at Cambridge remained unbroken for many years. It would seem difficult, however, to imagine that a Fellow could simultaneously have been a consultant and a county cricketer. But one of them accomplished this, and another was reported to have been the first recruit in the first regiment of what were then called the Volunteers. That Westminster School still stands where it is results mainly from the persistence of another Fellow. It was a Fellow who bestowed their title on the now disappearing cottage hospitals, and there was a Fellow who became such an authority on church liturgies that he was even consulted by the Vatican. Four of them, on retirement, took Holy Orders, and one was a revered Poet Laureate.

Clinician and Adventurer

All of them now belong to the past—scientists, eccentrics, royal counsellors—and who could say, looking back, which of them led the fullest life or left humanity most in his debt? But if—turning aside from the discoverers—the criteria may for a moment be accepted of contemporary clinical repute and variety of personal experience, there are certainly two who must come very near to bearing off the palms. Both of them, Hermann Weber and Joseph Fayrer, were men of extraordinary vigour and no doubt lucky—each from his own standpoint—in their physical equipment and the opportunities that came to them.

Although he was practising at a time when Jenner, Gull, Richard Quain, Andrew Clark, and Broadbent were all in the field, Weber (with no particular extraneous advantages; he was never on the staff of a teaching hospital) ultimately numbered amongst his patients as many as five Prime Ministers, Derby, Russell, Salisbury, Rosebery, and Campbell-Bannerman. He was an early advocate of the open-air treatment of pulmonary tuberculosis, and that he was far from being merely a fashionable physician can be deduced from the fact that he was also consulted, in their own illnesses, by Gull himself, James Paget, Spencer Wells, and Lister. In addition to all this, his energy was such that he was able to climb the Jungfrau and Wetterhorn at the age of 73, and he remained in practice till he was 80. He then devoted himself to the collection of old coins, and for the next 14 years travelled all over South Europe and the Middle East, finishing up as a leading numismatist, accepted as such by the British Museum.

If Fayrer was not so eminent as a clinician, he was even more, perhaps—in the high, Elizabethan sense of the word—an adventurer. Born a year later than Weber, he was the son of a naval officer, Coleridge and Wordsworth being amongst his boyhood's friends. He went to sea at the age of 16, visiting the West Indies, South America, Havana, and Bermuda, and it was not until he was 19 that he entered Charing Cross Hospital as a medical student. Having qualified, he joined the Navy, but soon afterwards obtained leave to accompany Lord and Lady Mount Edgcumbe on a long tour of France, Germany, and Italy. He learned the language of each country and was believed to be the first Protestant to obtain the degree of M.D. Rome. He then transferred himself to the East India Company, acted as medical officer to a troop-ship, saw active service with the Burma Field Force, learned Hindustani, and became Residency Surgeon at Lucknow. His house was both a hospital and a fort during its seige in the Indian Mutiny. He was the friend of Outram, attended Lawrence, was loaded with medals, gave most of his prize-money to Epsom College—and all this before he was 35.

He spent his post-war leave in England, where he became a Fellow of the Royal Society and a Fellow of the Royal College of Surgeons at Edinburgh, and, returning to India, was appointed to the Chair of Surgery at Calcutta and did valuable research work upon snake-poisoning. Ill-health brought him finally back to England, though he visited India again with the Prince of Wales, and he became President of the Medical Board at the India Office and a governor of Guy's Hospital, with a considerable private consulting practice, chiefly amongst Anglo-Indians. He spent most of his autumns in Scotland, shooting and deer-stalking, was made a baronet, and between the ages of 72 and 83 divided his time between London and Falmouth, where he was an ardent yachtsman and deep-sea fisherman.

Conclusion

But such a selection must needs be arbitrary. There were no doubt consultants with practices as large and as well deserved as Weber's and others who encountered perils, in the course of their duty, with a courage equal to that of Fayrer. Many would have been more than content to feel that they had given their names to some laboratory process or a new clan of micro-organisms, to have initiated some overdue sanitary reform, or to have inspired, as teachers, the young entries flowing through their wards and class-rooms. Examples of all such are to be found in the group under review. *Requiescant in pace.*

My thanks are due to the President and Harveian Librarian of the Royal College of Physicians, at whose suggestion the work was begun that has made this brief epitome possible, and to their successors under whom it was continued; also to the Library Keeper and Mr. G. H. Brown for their unremitting help during that work.

TOXIC WEED-KILLERS AND INSECTICIDES

At a conference called recently by the Minister of Agriculture to discuss the recommendations of the Zuckerman Working Party on toxic substances in agriculture certain precautions in the use of dinitro and organo-phosphorus compounds were agreed upon. The conference, which was called in order to concert safety measures for the coming spraying season pending full consideration of the Working Party's report, was composed of representatives of farmers, farm workers, manufacturers and contractors, and interested Government departments.

Recommended Precautions

1. *Protective Clothing to be Provided:* The complete list of protective clothing should comprise overall of white cotton or similar material, fastening at the neck and wrists; a white cloth hood to cover the head and the back and sides of the neck; rubber coat; rubber apron; rubber gloves; rubber boots; eye-shield; respirator; and sou'wester. ("Rubber" should be taken to include other materials which are shown by their manufacturers to give a degree of protection equal to that of natural rubber.)

The following items should be worn in the various operations:

Mixing: Overall; rubber boots; rubber apron; rubber gloves. When mixing takes place indoors, a respirator should also be worn; an eye-shield should be sufficient when the mixing is done out of doors.

Spraying: Crops: Overall; hood; eye-shield; rubber boots; rubber gloves. *Trees:* As for crops, except that a sou'wester and rubber coat should be worn in place of overall and hood.

Greenhouses: If the manufacturers' instructions regarding the use of smoke generators in greenhouses are followed, and the operator avoids inhaling the fumes during ignition and adequately ventilates the greenhouse before re-entering, he need not wear protective clothing, but he should carry a respirator at the ready position. If, however, the operator should have to enter a greenhouse while poisonous smoke or spray is present, he should wear overall, hood, rubber boots, rubber gloves, and a respirator of the full-face type. Workers applying sprays in greenhouses should be similarly equipped.

Tractor Spraying: With Air-conditioned Cab, the driver should wear overall and rubber boots.

Without Air-conditioned Cab, the driver should wear rubber coat, sou'wester, rubber boots, rubber gloves, and an eye-shield.

The worker riding on the sprayer in order to attend to the spray nozzles should wear rubber coat, sou'wester, rubber gloves, rubber boots, and an eye-shield.

The protective clothing needed for each operation should be provided by the employer and he should also provide a list for reference. The white overall and hood are intended to show up any contamination with the spray. They should be taken off and washed and a clean set provided, when they have become noticeably contaminated. Even if not noticeably contaminated, the overall and hood should be changed at the end of a week's work. The workers should remove all their protective clothing at the end of the spraying operations. On no account should they wear any part of it when they leave the farm at the end of the day's work. Where air-conditioned cabs are used their protective properties should be frequently tested. A reliable test would be through releasing the vapour of a lacrimator (tear-gas) such as ethyl iodo-acetate into the air intake of the charcoal filter.

2. *Washing Facilities:* Soap, clean towels, and clean water should be provided near the scene of spraying operations but sufficiently removed to avoid any contamination from spray drift. Care should be taken to avoid interchange of towels among workers. Running water should be used if available. Alternatively, clearly marked separate containers should be provided for washing (*a*) protective clothing other than overall and hood; (*b*) the face and hands.

3. *Working Periods:* No worker should do more than 10 hours' spraying a day even when it is necessary to work overtime, or work more than six successive days on spraying operations. No worker should be engaged on spraying operations while he is suffering from such complaints as a cold, bronchitis, or stomach upset.

4. *Supervision:* Every person employing workers on the agricultural use of these substances should make proper arrangements for their supervision and instruction.

5. *Meals:* All workers engaged on spraying operations should be forbidden to eat, chew, or drink in the spraying area, or to smoke while on their work.

6. *Decontamination of Machinery and Equipment:* Spraying machines, hoses, and spray-lances should be washed with water plus suitable "wetters" before repairs are made, and at the end of each shift; tanks and containers should be washed thoroughly at the end of each shift. In no circumstances should the worker clear blocked jets by blowing out with his mouth.

EXPERIMENT IN SOCIAL PSYCHOTHERAPY

Mr. Hilary Marquand, the Minister of Health, on March 14 opened the first rehabilitation aftercare centre of the Institute of Social Psychiatry at Christchurch House, Chancel Street, Blackfriars, London. Dr. Noel Harris, chairman of the institute, who presided, said that the fact that the Minister had come on this occasion was a tribute to the work of Dr. J. Bierer, the medical director, to whose enthusiasm the centre was largely due. He also thanked the London County Council and the North-west Regional Hospital Board for the support they had given to the institute, which was to a very large extent a pioneer body, anxious to try out new plans and start new ventures. The new centre was in the nature of a day hospital. If a patient came to an out-patient department for an hour or two he was likely for the rest of the day to be left drifting about with little or nothing to do. In this day hospital, however, he could spend his time in useful activity. Another pioneer venture which the institute hoped to establish when finance permitted was a residential hostel.

The Minister of Health, in opening the centre, said that his experience as Minister of Pensions had shown him the importance of rehabilitation. One of the most serious problems was that of the ex-Service man discharged as a psychoneurotic. It was clear that the mere payment of a pension in such cases was inadequate, and he had seen how these people benefited from therapeutic social clubs. The rehabilitation aftercare centre and the therapeutic social clubs associated with it were examples of the co-operation which could be obtained between a number of agencies in the National Health Service. The regional hospital board and the local authority (in this case the London County Council) were here taking part in an experimental undertaking in association not merely with one another, under the approval of the Ministry of Health, but also with voluntary effort. If such active participation on the part of the public could be built up, instead of the merely negative attitude that "they" would provide, then the Health Service could be made a success. He hoped all its neighbours would take an interest in this centre: if they did not, it would fail.

The brief proceedings closed with a vote of thanks to the Minister, proposed by Mr. Reginald Stamp (London County Council) and seconded by Dr. E. B. Strauss, and afterwards visitors inspected the premises and saw examples of the patients' work.

Work of the Institute of Social Psychiatry

The Institute of Social Psychiatry is a voluntary organization which has a grant from the London County Council. In addition to running the rehabilitation aftercare centre and the therapeutic social clubs, it founded the Social Psychotherapy Centre at Fellows Road, N.W.3, which is now under the North-west Metropolitan Regional Hospital Board as part of the National Health Service. Not only is treatment given at verbal level but different methods of treatment by experience and activity are used. The results so far are said to be promising and of a lasting nature, while the cost involved is given as only from one-fifth to

one-tenth that of older types of treatment. Success has been achieved in patients for whom psycho-analysis was inapplicable. The institute also carries out research work in connexion with social psychotherapy.

The rehabilitation centre just opened by the Minister is intended for those who do not need hospital treatment but are not yet fit for work. The centre is under the supervision of Dr. E. Weissmann, associate medical director of the institute. Originally it was founded elsewhere in Southwark in October, 1949. About 30 adult patients attend each day. They have occupational therapy, discussion groups and the like, and visit places of interest. In addition to their daytime activities, some of them attend the therapeutic social clubs in the evenings.

It is hoped eventually to form other such centres. They will help patients to be discharged before they have become too settled into mental hospital routine and too frightened of the outside world to adjust themselves to it. Among other things, it is hoped that they will be a means of preventing criminals and minor offenders from relapses by providing a social group and setting in which they are accepted as equals.

FELLOWS OF THE ROYAL SOCIETY

The following were elected Fellows of the Royal Society on March 15:

Carlyle Smith Beals. Dominion Astronomer, Ottawa, Canada. Distinguished for his contributions to observational astrophysics, including particularly the study and interpretation of the broadened emission lines in stars with extended atmospheres and of interstellar lines.

John Smith Knox Boyd. Director, Wellcome Laboratories of Tropical Medicine, London. Distinguished for important contributions to bacteriology and immunology. His researches on the dysentery bacilli, the typhus fevers, and tetanus led to great improvements in methods of diagnosis and control measures.

David Guthrie Catcheside. Reader in Plant Cytogenetics, Cambridge University. Distinguished for his researches on the cytology and inheritance of plants and animals.

Arthur Herbert Cook. Assistant Director, Brewing Industry Research Foundation, London. Distinguished for his researches in organic chemistry, particularly in relation to fungal antibiotics and the synthesis of heterocyclic compounds.

Sydney John Folley. Head of the department of physiology, National Institute for Research in Dairying. Distinguished for his researches into the physiology and biochemistry of lactation, and particularly the influence of hormones on milk secretion.

Herbert Frohlich. Professor of Theoretical Physics, Liverpool University. Distinguished for the application of quantum theory to the physics of the solid state, including particularly the properties of insulators and the interpretation of superconductivity. He has also made important contributions to the theory of atomic nuclei.

Geoffrey Gee. Director, British Rubber Producers Research Association. Distinguished for his work on the properties of substances of very high molecular weight, especially rubber and rubber-like substances.

Hans Arnold Heilbronn. Professor of Mathematics, Bristol University. Distinguished for his discoveries in the analytic theory of numbers and in particular for his work on the class-number of quadratic fields.

Gerhard Herzberg. Director, Division of Physics, National Research Council, Ottawa, Canada. Distinguished for his contributions to experimental and theoretical physics and chemistry, in particular for his work on molecular and atomic spectra.

Joseph Burtt Hutchinson. Director, Central Cotton Research Station, Namulonge, Uganda. Distinguished for his genetical studies of the cotton plant which have led to notable advances in the classification of this genus, and to the theory of the evolution of its species.

Harry Raymond Ing. Reader in pharmacological chemistry, Oxford University. Distinguished for his investigations into the chemistry of drugs and the chemical aspects of drug action.

David Lack. Director, Edward Grey Institute of Field Ornithology, Oxford. Distinguished for his studies on the behaviour and evolution of birds, especially the formation of species and races of the finches of the Galapagos Islands.

Thaddeus Robert Rudolph Mann. Member of the staff of the Agricultural Research Council. A biochemist distinguished for his researches on carbohydrate and phosphorus metabolism of muscle, moulds, and mammalian seminal fluid, and for his studies on metalloprotein enzymes.

Kurt Alfred Georg Mendelssohn. University Demonstrator, Oxford University. Distinguished for his work in experimental physics, especially for his investigations on the properties of liquid helium and of the superconducting state.

Albert Neuberger. Biochemist, National Institute for Medical Research, London. Distinguished for his researches on the biochemistry of amino-acids and proteins.

Leonard Bessemer Pfeil. Director of Research, Mond Nickel Co. Ltd. Distinguished for his contributions to metallurgical research on ferrous and non-ferrous metals.

James Arthur Prescott. Director, Waite Agricultural Research Institute, Adelaide, S. Australia. Distinguished for his investigations on the soil types of Australia, their geographical distribution and relation to climate and vegetation.

Maurice Henry Lecorney Pryce. Wykeham Professor of Physics, Oxford University. Distinguished for his work in theoretical physics, in particular quantum mechanics and quantum electrodynamics, and for his contributions to the knowledge of the properties of the solid state at low temperatures.

William John Pugh. Director, Geological Survey and Museum, London. Distinguished for his research on the Ordovician and Silurian rocks of Wales.

John Ashworth Ratcliffe. Reader in Physics, Cambridge University. Distinguished for his contributions to the development of the scientific basis for radio communications.

Thomas Alan Stephenson. Professor of Zoology, University College, Aberystwyth. Distinguished for his researches on marine biology, especially on the growth and reproduction of corals and the distribution of animals and plants on the sea shore.

William Homan Thorpe. Lecturer in Entomology, Cambridge University. Distinguished for his researches on insect physiology and animal behaviour.

Petrus Johann du Toit. President, Council for Scientific and Industrial Research, South Africa. Formerly Director, South African Veterinary Research Institute, Onderstepoort. Distinguished for his contributions to the study of the diseases of animals, especially of domestic cattle, and particularly those due to soil deficiences and to infections transmitted by ticks.

Alan Mathison Turing. Assistant Director, Computing Machine Laboratory, Manchester University. Distinguished for his contributions to mathematical logic and in particular for his work on computable numbers.

Alfred Rene John Paul Ubbelohde. Professor of Chemistry, Queen's University, Belfast. Distinguished for his work in physical chemistry, with special reference to structural and thermodynamic questions and reaction mechanism.

Correspondence

Slimming by Television

SIR,—We have for some time been concerned by the publication of dietary advice in the daily press. Recently, however, this dissemination of gratuitous information has taken the form of a series of television programmes culminating in the free distribution of obesity diet sheets to any members of the public who care to apply to the B.B.C. for them.

This reducing diet, which is fairly strict, provides 1,000 calories a day. It has been carefully constructed, and applicants are told to follow it under the guidance of their medical advisers. We feel, however, that this injunction will often be disregarded and that many of the 35,000 people already clamouring for diet sheets will endeavour to follow the instructions without recourse to their doctors.

It has always been a principle of our profession that no dietary advice should be given without specific instructions from the patient's doctor. No printed diet sheet should ever be handed out, moreover, without an interview during which the dietitian satisfies herself that the patient has understood the principles of the regime, that it is within his means, and that it is suited to the social conditions under which he lives. She will also arrange for the patient to be kept under supervision so that she can assure herself that the diet is proving suitable, that it has been understood, and is being applied.

None of these conditions is entirely fulfilled by the present large-scale distribution of diet sheets. We feel that this situation is undesirable and even potentially dangerous.—I am, etc.,

K. FITZPATRICK,
Secretary, British Dietetic Association.

London, S.W.3.

Research on Sore Throat

SIR,—The papers of T. C. Macdonald and J. B. Landsman and their respective colleagues (February 17, p. 323, *et seq.*) provide an opportunity for asking some simple questions about the role of the haemolytic streptococcus in infection. The further investigations of Landsman *et al.*, whose paper is a preliminary communication, may, if they have not already done so, provide the answers. The questions which seem to need an answer are:

1. These sore throats—are they sporadic or epidemic ?

2. If sporadic, what, in addition to bacterial agency, is the occasion of their appearance ?

3. If not sporadic, what is the over-all character of the visitation in which they feature ? Is it (*a*) epidemic sore throat, or (*b*) a respiratory infection in which sore throat is but an inconstant although important symptom of the cases ?

4. If the sore throat itself is but an inconstant symptom, what is the primary organism causing the whole epidemic ?

5. Do patients with inflamed throats harbouring beta-haemolytic streptococci form part of the same epidemic as those from whose sore throats no such streptococci can be recovered ?

6. If the cases of sore throat are epidemiologically related, appearing in a continuum of infection whether or no they harbour beta-haemolytic streptococci, what is responsible for the inflammation of the throat, and what pathogenic rôle if any do the haemolytic streptococci play ?

7. Landsman and his colleagues record the associated symptoms in their cases of sore throat, but they do not say how many similar cases lacking the angina appeared to be epidemiologically connected with those of sore throat. This would make a most valuable record, especially if they also investigated the distribution of haemolytic streptococci in such non-anginose related cases.

8. It is also important to know if beta-haemolytic streptococci inhabiting an uninflamed throat are encouraged to proliferate by the advent of other invaders whether respiratory or not—e.g., viruses—and furthermore if such symptomless increase due to biologically favourable conditions causes a rise in the streptococcal antibody level in the blood. If so, rises in the antistreptolysin titre have little more aetiological significance than positive swabs. Bacterial multiplication can of course reach astronomical proportions in a very short time and decrease equally rapidly.

Until these questions are answered the laboratory investigation of sore throat and some other conditions remains uninformative and much of the literature on the subject is difficult to interpret and evaluate. Simple though these problems seem, the research required is by no means easy. Only co-ordinated field and laboratory studies such as those recorded in your issue of February 17 can supply the answers.

One often wonders why particular organisms have been chosen for the role of villain. Possibly in the case of the haemolytic streptococcus the dramatic appearance on the blood-agar plate may have something to do with it. It might be informative to run a parallel study in which a different hare is hunted—e.g., *Streptococcus viridans, Streptococcus pneumoniae,* or *Neisseria catarrhalis*—in order to compare the findings with the beta-haemolytic streptococcal investigation.

Unlike those studied by Landsman and his colleagues the cases of sore throat seen in general practice in this area showed a remarkable difference in sex distribution in the lower age groups (see the accompanying figures). Does this

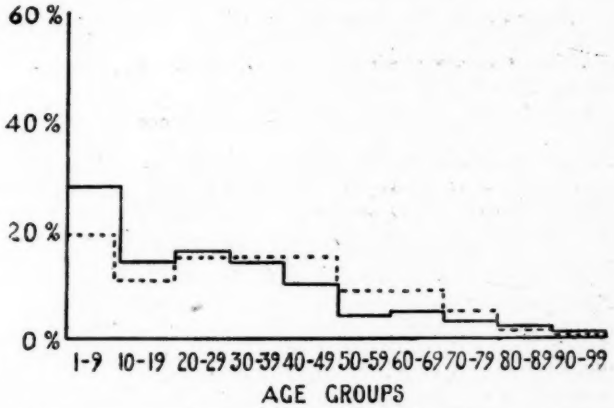

FIG. 1.—Age distribution of sore throats (continuous line) compared with that of the population served by the practice (dotted line).

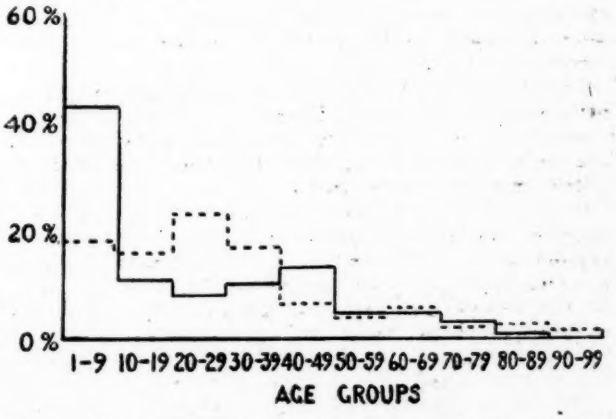

FIG. 2.—Age distribution of sore throats in males (continuous line) compared with that for females (dotted line).

represent, I wonder, greater susceptibility of small boys, greater fortitude among small girls, or greater anxiety among mothers over the male child ? Comparable figures for other respiratory diseases over the same period do not show this anomaly. The figures are based on the 308 cases presenting mainly as sore throat in 1948. In comparison those presenting primarily with cough and coryza numbered 819.—I am, etc.,

R. E. HOPE SIMPSON.

Cirencester.

Pink Disease

SIR,—My having been recorded as having had the great privilege of moving a most cordial vote of thanks to Sir Stanton Hicks for a very interesting and important paper (February 17, p. 322), you might permit me to indicate the substance of my brief comments to the effect that the biochemical evidence put forward would not necessarily justify an assumption of a primary adrenal involvement of aetiological significance, if such were intended.

I venture to make this clear, because of the prudency of a cautious approach by endocrinologists to problems in other fields of medicine—an attitude which does not preclude an awareness of the possibility, or reality, of changes in endocrine function in the course of non-endocrine disease.—I am, etc.,

London, W.1. S. LEONARD SIMPSON.

Side-effects of Antibiotics

SIR,—The valuable communication by Dr. W. Tomaszewski (February 24, p. 388) will, it is hoped, again focus active attention upon the not unimportant side-effects of the therapeutic use of chloramphenicol and "aureomycin," previously mentioned in your annotation. It is indeed surprising to those who have had access to the hitherto limited supply of these drugs for the treatment of specified diseases that the unrestricted supply is contemplated in the near future without guidance or warning of the possible severity of the side reactions which may follow their use.

These reactions occur most frequently in the gastro-intestinal tract, and, as observed by Dr. Tomaszewski, are most striking in the oral cavity. It is probable, however, that the mouth is the mirror in which lesions can be observed which are also present in other parts of the gastro-intestinal tract. It is questionable, therefore, whether these antibiotics should be employed in the treatment of lesions of the gastro-intestinal tract that are not attributable to specific pathogens known to be sensitive to one or other of these antibiotics, as in the case of salmonellae. Recent experiences with three cases of ulcerative colitis, two treated with aureomycin and one with chloramphenicol, have led us to entertain this doubt. Although in all three cases there was a temporary remission of fever and reduction in stool count while under treatment, there was no improvement in the weight, appetite, or general condition of any of the patients. Indeed, in two of the three cases, both women (one treated with chloramphenicol and one with aureomycin) and both admittedly very ill when the antibiotics were given, our impression was that this treatment accelerated the rate of deterioration, and both patients died soon afterwards. The fatal case who received aureomycin developed a severe glossitis, stomatitis, and widespread pellagrous eruption within a few days of starting the treatment. The patients receiving chloramphenicol also developed a stomatitis. All three patients received adequate parenteral injections of vitamin-B complex during the ten days of treatment with antibiotics. In view of this experience, although limited, we feel that the recommendation to use aureomycin and chloramphenicol in the treatment of ulcerative colitis should be received with caution.

We should also like to record a serious reaction which occurred in a female patient receiving chloramphenicol for an attack of typhoid fever.

After the diagnosis was made the patient was transferred to a fever hospital, where she had a full course of chloramphenicol, to which she responded favourably. However, soon afterwards she relapsed and another course of chloramphenicol had to be given. Soon after the onset of the second course she began to get severe rectal haemorrhage and was readmitted to the Radcliffe Infirmary. Throughout her illness she had suffered from severe constipation, and on admission was found to have a faecal impaction, which was cleared under an anaesthetic. Proctoscopy at this time showed the rectum to be congested and oedematous, with multiple bleeding points.

The chloramphenicol was continued, and for the next two weeks painful rectal haemorrhage occurred whenever her bowels were opened, although the stools were kept soft with liquid paraffin. The haemorrhage was sufficiently severe for her haemoglobin to drop to 30% at one point, and, in all, the patient was transfused with 10 pints (5.7 litres) of blood. Coincident with the second course of chloramphenicol she complained bitterly of a sore mouth and rectal and vaginal irritation and discomfort. She was given parenteral injections of vitamin B without avail.

The chloramphenicol was stopped after the second course had been in progress for three weeks and her stools had become negative. Within 24 hours of discontinuing the chloramphenicol there was a dramatic change in her condition. Rectal bleeding ceased entirely, she felt and looked better in every way, and the genito-rectal discomfort vanished. Thereafter she made an uninterrupted recovery. We have little doubt that the rectal haemorrhage was the result of hard, constipated stools damaging the mucous membrane rendered abnormally hyperaemic by the chloramphenicol.

In conclusion we would point out that three of these four patients were women (the two fatal cases of ulcerative colitis and the case of typhoid fever). This point supports Dr. Tomaszewski's observations that the most severe side-effects of aureomycin and chloramphenicol tend to appear in the female sex.—We are, etc.,

F. G. HOBSON.
Oxford. J. M. RICE-OXLEY.

Visual Hallucination of the Self

SIR,—Professor Jean Lhermitte's article on autoscopy (March 3, p. 431) is of great medical and philosophic interest and is presented in a style so vivid and clear that it tempts one to use the modern term "gripping."

May I draw attention to the case of Rex Whistler described by Sir Osbert Sitwell in *Noble Essences*? Whistler went out at 2 a.m. on a summer morning to post a design on which he had been working late; he had left his room in Fitzroy Square lighted, with the curtains drawn back. Returning home on the other side of the street, he looked in and saw a man seated, and apparently working, at his own desk; as he stood still to watch, the figure raised his head and looked straight at him; he saw it was himself. "While he still struggled under this impact, the figure opposite dissolved."

The hallucination was due no doubt to fatigue and not to incipient disease.—I am, etc.,

Hove, Sussex G. M. WAUCHOPE.

SIR,—I much enjoyed Professor J. Lhermitte's subject and masterly treatment (March 3, p. 431). Goethe's account of his autoscopy has some unusual features which are worth recalling. "Riding home on the path towards Drusenheim, I saw myself—not with the eyes of the body but with the eyes of the mind—riding towards me on the same path, but wearing a habit I had never owned before: it was of a light grey with some gold. As soon as I shook myself out of this dream the apparition disappeared. But it is strange that, when eight years later I found myself on the same path to see my fiancée for the last time, I was wearing that dream habit—not by design, but entirely by chance" (*Dichtung und Wahrheit*, Book 11).—I am, etc.,

Isleworth, Middlesex. H. PULLAR-STRECKER.

SIR,—Current existentialist theory might shed some light on the psychology of the hallucinated image of the self described by Professor Jean Lhermitte (March 3, p. 431). The phenomenological basis of this philosophy in the modern form initiated by Heidegger is the projection of morbid psychology as the actual structure of the cosmos; concern (*Sorge*), the essence of which is fear intensified to dreadful anguish, is what existence is made of. In consequence man, the individual, is essentially isolated and existentially forlorn. This is an elaboration of Kierkegaard's *Angst*, itself the active aspect of Pascal's passive *misère*.

The field of existentialist thought is of venerable age (cf. St. Paul: "We know that the whole creation groaneth") and wide extent, but to most people it means the psychological notions lately purveyed in the novels, plays, and lectures of Jean-Paul Sartre, much of their intriguing content having reached the wondering public via explanatory journalism not always well informed. A feature of Sartrian theory is "lucidity": if the subjective world is anguish, the corresponding objective dreadfulness must be clearly observable. But, epistemologically, existence is a philosophic abstraction; and to focus it lucidly as a projection of personal subjectivity would be to hallucinate it, could it be visually observed. However, since an abstraction is a meaningful inference, existence can be cognized only inferentially. To cognize it lucidly in terms of personal subjectivity is not to hallucinate it; it is to infer it as a fantasy, for fantasy is the cognitive homologue of perceptual hallucination.

Mystic emotion is a yearning for cosmic unity. In the ecstatic mood attainment is enjoyed as a feeling of identity; the vertigo, nausea, and anorexia ("It's the giddy limit"; "it makes me sick"; "I'm fed up") provoked by the aggravation of being separated and out of tune with the pitch-and-toss of the world then disappear. But the paradox of actual forlornness in a potentially friendly world is otherwise resolved by another existentialism with an opposite axiology—for example, Gabriel Marcel—in the mystic doctrine of *présence*. Some of the phenomena of autoscopy may be well accounted for by the desire, mediated either psychosomatically or soma-psychotically, to gain the comfort of empirical evidence for *présence* within the isolated person by means of *le double*—the self hallucinating its own image in order to enjoy its own company.

While doing research on existentialism for the Philosophical Society of England I came across a poem, *Le Double*, by Jules Supervielle, which depicts an extremely subtle self projecting its double, which thereupon reprojects the image of the self to mutual advantage:

> Mon double se présente et me regarde faire,
> Il se dit: "Le voilà qui se met à rêver,
> Il se croit seul alors que puisse l'observer
> Quand il baisse les yeux pour creuser sa misère,
> Au plus noir de la nuit il ne peut rien cacher
> De ce que fait sa nuit avec ma solitude.
> Même au fond du sommeil je monte le chercher,
> A pas de loup, craignant de lui paraître rude,
> Et je l'éclaire avec mon électricité
> Délicate qui ne saurait l'effaroucher.
> Je m'approche de lui et le mets à l'étude,
> Voyant venir à moi ce que son cœur élude."

I translated this freely without, I think you will agree, doing it violence, and preserving the rhyme scheme, the changes of which are cunningly adapted to the movement of the thought:

> My double stands before me, looking into my face
> And saying: "This is he who gives himself to sleep,
> To dream; he thinks he is alone, and then it is I peep
> Through and behind the lowered lids. I view the empty place
> Hollowed by night-black loneliness, scraped clean of all surmise,
> And from my silent solitude his bare night fashions sooth.
> Out of the deeps of slumber I follow him, I rise,
> Soft-footed as a wolf, so I be not uncouth;
> With a live-wire I touch him and flood his soul with light,
> The current glowing delicately void of all affright.
> I set a theme for his research, sleep-reverie that's smooth,
> And what eludes his dreaming heart comes home to me as truth."

—I am, etc.,

London, E.7. ROBERT POOTS.

Spens Awards for Professors

SIR,—Your correspondent Dr. John L. Edwards (March 10, p. 525) is mistaken in his assumption. The provisions which govern the payment of distinction awards to consultants who hold whole- or part-time appointments with hospital boards are not applicable to professors or teachers who do not hold *paid* appointments with hospital boards.

Under paragraph 5a of the terms and conditions of service a part-time consultant receives a proportion of the award corresponding to the number of sessions worked. Under paragraph 9 (1) the proportion of the award which is payable to a professor or teacher depends upon his work as such. If he is a full-time professor he receives the full amount of the award, if he is a part-time professor he receives a proportion of the award corresponding to the proportion which his salary bears to that of a similar whole-time post. Such persons hold honorary *unpaid* appointments with the hospital board in order to qualify for distinction awards. If, however, a part-time professor also holds a *paid* part-time appointment with the hospital board, his proportion of the award depends upon the number of sessions for which he is paid by the hospital board and not upon his salary as a professor.

These provisions may obviously lead to serious anomalies in particular cases.—I am, etc.,

London, E.C.4. ROGER ORMROD.

Treatment of Prostatic Carcinoma

SIR,—In your feature "Any Questions?" of March 3 (p. 487) a dosage of stilboestrol is suggested for the treatment of carcinoma of the prostate. A statement is made that when this drug causes nausea, dienoestrol in the same dose may then be substituted. This is erroneous. Dienoestrol when prescribed should be given in doses four times as large as those of stilboestrol. This is recommended by the *National Formulary* and has been proved to be clinically true in several cases of carcinoma of the prostate treated by us.—I am, etc.,

Preston. CHARLES DUNDON.

Hypertension and Retained Nitrogen

SIR,—I was very much interested in the paper by Professor Hans Selye (February 10, p. 263). In 1937 we published a volume on high blood pressure (Oxford University Press, 1937). In it we recorded a considerable number of experiments, which showed that under a high protein intake cases of hypertony retained nitrogen. (On a moderate nitrogen intake there was no nitrogen retention.) At that time our committee of research consisted of Professors Roaf, Shannon, Dible, and myself. None of us could suggest an explanation for this fact.

In more recent years we have been engaged in studying the metabolism of carbohydrate in high blood pressure, and we found that even when there is no diabetes the curve after a glucose-tolerance test is abnormal in a very large number of cases of women at the menopause—we did not find it very frequently in men. The fact that, in addition to an impaired protein metabolism, the carbohydrate metabolism too was impaired in these cases led to the conclusion that hypertony is due to over-action of the anterior pituitary (*Lancet*, 1949, **2**, 283). I am not quite sure which hormone is responsible for this action, seeing that the carbohydrate metabolism is abnormal, and particularly considering that fat, cholesterol, fatty acid, and phosphatide values are significantly higher in cases with high blood pressure.

I am glad to see that our work of 14 years ago has been confirmed by the paper of Professor Selye, and that there is a definite indication why high protein should not be given in cases of hypertony.—I am, etc.,

Liverpool. I. HARRIS.

A Life of Professor J. A. Ryle

SIR,—I am preparing a life of the late Professor J. A. Ryle. I should be very glad to hear from any of your readers who knew him, whether as friend, colleague, teacher, or consultant. Letters, papers, or information (especially about early days at Guy's) would be welcome. Any letters which are sent will be copied and returned as soon as possible.—I am, etc.,

9, Grosvenor Road, Harborne, Birmingham. PATRIA ASHER.

Diseases of the Nipple

SIR,—I wonder if Sir Cecil Wakeley would accept a modification of the last sentence of his excellent article (March 3, p. 468).

Eczema of the nipple is an entirely different process from Paget's disease and is readily distinguishable histologically even in those cases where the clinical differentiation is difficult. In the latter type of case, a biopsy of the affected skin will enable accurate diagnosis to be made and the major operation avoided when it is not necessary.—I am, etc.,

London, W.1. F. RAY BETTLEY.

SIR,—Sir Cecil Wakeley in his instructive article (March 3, p. 468) on diseases of the nipple makes a well-merited appeal for the avoidance of tight-fitting brassières without room for the nipples.

In my experience this minor deformity, which can, however, cause considerable trouble later on, frequently starts before brassières begin to be worn. It is common, especially in the poorer classes, to see pubescent girls with marked breast development still wearing children's underwear, often in any case rather tight, but markedly so now that breast development is taking place. The result is that the nipples are continuously compressed into the breasts and the condition of retracted nipples produced—a close analogy being the influence of tight socks on the production of ingrowing toenails.

The nipple does not remain retracted, for it is not retracted before the breasts start to develop and should never be in this state. If at this age the nipples are drawn out as described by Sir Cecil Wakeley they are, in most cases, not themselves abnormal nor unusually small. Another reason for the earlier wearing of properly designed brassières is that stretching of the suspensory ligaments of the breasts is reduced, and thus the ideal shape of the breasts is better maintained.—I am, etc.,

London, S.E.23. N. K. MACRAE-GIBSON.

POINTS FROM LETTERS

Human Ostrich

Dr. D. J. CANNON (Kildare, Eire) writes: Dr. J. C. McMullin's case (February 10, p. 301) is of great interest, and of particular interest to me as I claim the privilege of being its part-time owner. For that reason it might interest readers of the *Journal* to know a little more of the previous history of the case. The patient was admitted to hospital under my care on account of acute abdominal symptoms. He looked gravely ill; his abdomen was silent. He had all the signs and symptoms of diffuse, spreading peritonitis, which I thought was due to rupture of a gangrenous appendix. Having opened the abdomen, I found that the peritoneal cavity was full of pus. It was soon obvious that the appendix was not the incriminating agent. Having aspirated the pus, I explored the abdominal cavity. I soon discovered a hard, irregular object protruding for about 2 in. (5 cm.) from the middle of the transverse colon. The object was rapidly removed. The rent in the colon was sutured and an omental graft was laid on the suture line. The peritoneal cavity was drained. . . . After a rather stormy convalescence the patient recovered. The foreign body consisted of a portion of the rod connecting the "shoe" of the front brake of a bicycle. The body was 3½ in. (8.75 cm.) long. The rod was expanded at one end. A bolt was driven through the expanded portion and fixed by a nut. The head of a sharp nail was driven through a hole on the expanded portion, leaving about ¼ in. (0.6 cm.) of the sharp nail exposed. It was the expanded portion and part of the stem which had perforated. Perforation of the bowel by a foreign body is the rarest of abdominal catastrophes, hence conservatism is the keynote of treatment. . . . A week before his discharge the patient complained of abdominal colic with localized rigidity, but he did not vomit. The symptoms should have been a warning to me that other unwelcome visitors might have invaded the alimentary tract. If this warning had been communicated to Dr. McMullin, and if he was assured by me that neither a sponge nor a forceps was left behind in the abdominal cavity, would his treatment have been different? . . . I should very much like—and I am sure Dr. McMullin shares my wish—to have the views of my surgical colleagues on the precise indications for the removal of a foreign body from the alimentary tract. These indications are too vaguely expressed in our surgical textbooks.

Obituary

GEORGE MILTON SMITH, M.D., LL.D.

Anglo-American co-operation in medical research has suffered a severe loss in the death, which occurred on February 26, of Dr. G. M. Smith, of Pine Orchard, Connecticut.

George Milton Smith was born in Hong Kong in 1879. He graduated A.B. (Yale) in 1901 and M.D. (Columbia) in 1905, and later became associate professor of pathology in Washington University (St. Louis), where he worked from 1910 to 1934. He then returned to Yale on appointment as medical director of the Anna Fuller Fund, which post he still retained at the time of his death. While in Yale he also acted as research associate in anatomy. In later years his research interests lay mainly in the comparative pathology of tumours (on which he published in *Zoologica* and elsewhere) and in historical medicine. However, his greatest achievement undoubtedly rests in the advancement of medical research, not only in the United States but elsewhere, which he was able to effect through the medium of the Anna Fuller Fund and as adviser to the Jane Coffin Childs Memorial Fund for Medical Research, with the directors of which (Stanhope Bayne-Jones and M. C. Winternitz) he worked to the end in close harmony and friendship. Much of this contribution lay in the field of cancer research, and he also acted as a member of the National Advisory Cancer Council from 1939 to 1942. He was a devoted supporter of the Allied cause in the late war, and served as chairman of the National Research Council committee on armoured vehicles. In George Smith we admired his intense loyalty to his country and to Yale (which conferred upon him its honorary degree of LL.D. in 1947), his complete unselfishness, and his lasting belief in international co-operation in science and medicine. He was also able (and wont) to accompany his practical benefactions with the warmth of encouragement to a rare degree. His loss will be mourned, and his memory honoured, by a host of colleagues and friends the world over.—A. H.

Sir PERCY TOMLINSON, K.B.E., C.B., D.S.O. F.R.C.P

Dr. I. A. Aubrey writes: Professional soldiers will pay tribute to Major-General Sir Percy Tomlinson as a great administrator in the second world war. I, a temporary soldier of two world wars, would like to pay my humble tribute to a great commanding officer of the first war.

Later experience has convinced me how uncommon are the gifts which go to make the successful commander, and how much better is the administrator who has had experience of command. I served for years in the field ambulance which he commanded and was schooled for war under his vigilant eye. His energy, enthusiasm, and drive were an inspiration. He encouraged initiative, was quick with reproof, but as ready with the approving word. When unmerited criticism descended upon one of his officers or men he could be depended upon vigorously to defend the wronged one. He inspired loyalty and received it in full measure from all ranks. I share my grief with many at the passing of a great soldier and an upright gentleman.

Dr. THOMAS CLIFFORD died at his home, Thornhill, Stalybridge, Cheshire, on February 21 after a short illness, at the age of 87 years. He was a native of Sunderland and qualified M.R.C.S. and L.S.A. in 1887, taking the L.R.C.P. and graduating M.B. of the University of Durham in the following year. He came to Stalybridge in 1888, and from then until his retirement in 1935 he faithfully and assiduously served the public of that town. He was a member of the British Medical Association for 63 years. In 1905 he was appointed honorary surgeon to the District Infirmary, Ashton-under-Lyne, and filled that post for 20 years. In 1915 he volunteered for service with the R.A.M.C. and became a surgeon in a hospital ship in the East Mediterranean. Extremely active, very abstemious, cheerful, and possessing a great sense of humour, he was one of the most popular and well-known men in the district. In the early part of 1900 he became one of the first householders in Stalybridge whose home was lit by electricity, and he had a gas engine installed in his home to provide the electric power. At one time he was a keen golfer, but latterly he had devoted his leisure hours to playing chess and bridge. One of his greatest hobbies since his retirement was the interest he took in birds, and he was chairman of the committee of the Royal Society for the Protection of Birds connected with the Cheetham Park bird sanctuary. His other hobbies were geology and astronomy. His wife died in 1943. He leaves one son, who is an ophthalmic surgeon in Brighton, and a daughter. —A. W.

Dr. HUGH OWEN WILLIAMS died at his home in Milford Haven on February 25 after a long illness. A native of Abersoch, Caernarvonshire, he studied medicine at St. Bartholomew's Hospital, qualifying in 1907, and graduating M.B., B.S. in 1910. He took the D.P.H. in the same year. His first appointment was that of assistant M.O.H. and school medical officer for Buckinghamshire, but shortly after he became county M.O.H. for Pembrokeshire. Forsaking whole-time public health work, he took over a vacant practice at Milford Haven in August, 1915, but continued to act as county M.O.H. until 1919. He was appointed M.O.H. to the Milford Haven U.D.C. and Port Health Authority in 1920. His clarity of thought and sound judgment, his sympathy, and his understanding soon made him outstanding in general practice, and his public health training was of inestimable value in guiding the local authorities during the conception and inauguration of a large water undertaking as well as housing and sewerage schemes. As port medical officer he was very interested in the steam trawler fishing which is the local basic industry, and helped to introduce reforms in the production and handling of fish. His limited recreation was devoted to golf and shooting; he was never happier than when tramping the fields with a gun. His extensive reading comprised the most recent thought and research in medicine, and he published on a variety of subjects. He was an ardent Welshman with a great love of the language and literature, which he constantly read, but not to the exclusion of the best in English literature. His passing was widely mourned.—D. A. R.

Medical Notes in Parliament

Sickness Benefit

Mr. PERKINS asked the Minister of National Insurance on March 12 why self-employed persons were enabled to draw sickness benefit under the National Insurance scheme. He suggested that it was undesirable that people who are paid a full salary, whether sick or not, should be eligible to draw benefit, and that the right thing would be to reduce the weekly contribution that everyone pays and to debar M.P.s from obtaining sickness benefit.

Dr. SUMMERSKILL replied that it was an insurance scheme. If a person had paid his contributions he was entitled to benefit.

Closed Shop at Durham

On March 13 Miss HORSBRUGH moved:

That this House regrets the decision of the Durham County Council in insisting on membership of an appropriate professional association or trade union as a condition of employment by that council.

She said that it was now more than four months since Durham County Council had taken the decision. The resolution required, under threat of dismissal, that every member of the county council's staff should provide evidence of membership of a trade union. It had been passed on November 1, 1950. It had been sent out to members of the staff, and an emergency committee had been formed to see the replies.

On November 15 the matter had been raised on the Adjournment by Dr. Charles Hill. The Parliamentary Secretary to the Ministry of Health had used these words in his reply: "We regret the resolution passed by the Durham County Council." The identical words had been put in the present motion. After that, letters had been sent from the Ministries of Health and Education to the county council saying that the Government did not approve of coercion. The council had reaffirmed its resolution. There had been consultation between the Ministries and representatives of the council. The dismissals had not been enforced on November 22, but the resolution had not then or yet been rescinded. The technique in Durham was rather that of the cold war. The threat remained and they were told that it had been successful. Many more of the staff had joined trade unions.

She said there had been a vacancy for the headmastership of a school, and six applicants had been interviewed. Five had refused to say whether or not they were members of a trade union. Only one had answered and he had got the job. He might have been the best man for the job, but applicants for posts who declined to answer questions were putting themselves in a very difficult position. She asked that the Government should make its position clear. They must have it from the Government that they were opposed to intimidation and would support those who resisted it. Tyranny and intimidation had spread in other countries not because the majority of the people were willing to acquiesce in the suppression of their freedom but because they did not resist and had no confidence that they would have the support of those in authority if they did resist. That must not happen here.

Mr. BLYTON moved an amendment to change the motion to read

"That this House, while approving the attitude already adopted by His Majesty's Government, and being anxious not to interfere with the autonomy of local authorities, hopes that the discussions now proceeding between the Durham County Council and some of the associations concerned will lead to an amicable settlement of the points at issue."

TRADE UNIONISM IN DURHAM

Mr. BLYTON said he had lived in Durham County and had been a trade unionist all his life. The history of the county's fight for better wages and conditions and for recognition of trade unionism was ingrained in the people of Durham. He had been 25 years in the mines, and had known instances when they had refused to go down the pits with non-unionists, when they had made them travel by themselves and had exhibited every kind of awkwardness to force those men to recognize their obligations. A non-unionist when a dispute arose was a menace to the union and its fight for better wages and conditions. This attitude arose because of Tory vindictiveness. In the past they had always supported the employers in any fight. He believed that the Government's approach to the problem was correct. Durham had decided that they would not implement the resolution. Was it a crime to ask a person if he was a member of a trade union? He saw nothing wrong in it. He considered the B.M.A. a closed shop.

Dr. HILL asked whether he was suggesting that there was any compulsion to join the B.M.A.

Mr. BLYTON replied that, when authorities had advertised for a doctor, the B.M.A. had prevented the doctors from applying.

Dr. HILL asked whether Mr. Blyton would agree that whenever the advertisements of his authority had been rejected it had been because his authority had not observed a national agreement on remuneration.

Mr. BLYTON replied: "Is not the Dental Board a closed shop?" He said the Dental Board said it would have no foreign dentists in this country, though miners were forced to take in foreigners when it suited the Opposition.

Dr. HILL pointed out that we had had hundreds of foreign dentists.

Mr. BLYTON concluded by saying that the Tories had harnessed to this dispute their hopes of reviving Toryism in Durham, and he urged his friends in Durham to accept the Government's advice.

Mr. COVE, seconding Mr. Blyton's amendment, said that Durham had had a tragic trade union history. The Government had pursued the wisest and most helpful policy.

Sir CUTHBERT HEADLAM said that the county council were in the position of employers and were trying to compel their employees to do something of which their particular unions did not approve. Therefore the trade unionists on the other side of the House were defeating the objects which they said were the objects of trade unionism. Now that local government was so large an employer of labour, councils were employers and should no longer be politicians.

Mr. HERBERT BUTLER said that, while the Tory party talked of the theoretical liberties which citizens ought to enjoy, those who had had to suffer at the hands of employers remembered that the liberty they got was the liberty of the unemployment exchange and the cold hearth at home.

Mr. JOHN COOPER said that, if they were going to regret every case of local authorities imposing compulsory trade unionism, that was very strong compulsion indeed.

MINISTER REPLIES

Mr. TOMLINSON, Minister of Education, said that he was charged with the duty of seeing that educational administration under an Act of Parliament was maintained. If any action of an authority interfered with or prevented the administration of the Act it was his duty to see that the Act was carried out. He had all the power necessary to indicate to the people concerned the line of action which would be taken in the event of the circumstances arising which he thought it was everybody's duty to prevent.

As a result of the action which he and the Minister of Health had taken the council's resolution had not been implemented. Now they had been told that it was still on the books. But there were thousands of resolutions still on the books of local authorities which had not been implemented, and nobody ever bothered about them. It was action taken of which they must take cognizance. He was aware that in two or three instances recently candidates for posts under the education authority had been asked whether they were members of a union, and that in one instance the authority had appointed a candidate who had answered the question in the affirmative contrary to the advice of the union. He suggested that it did not follow that the candidate's answer was the determining factor in his appointment.

He did not want to interfere with every local authority; there was something to be said for the autonomy of local authority and for seeing that local authorities observed a code which was generally acceptable. He wanted the National Union of Teachers to have the opportunity of attempting to work out that code with the Durham authority. A person who was made to do things against his will did not do them in the interests of those whom they ought to have most at heart in this business. He asked the House for the confidence expressed in the amendment rather than in the motion.

INDIVIDUAL LIBERTY

Dr. HILL said that within the limits imposed on the Minister by the situation and within the limits of local autonomy in this matter the Minister had made every effort to secure a peaceful and satisfactory solution to the Durham difficulty. At the same time the House could not ignore those limits, for they seemed to be a determining factor in the situation. One of the factors which had led the council to act in the way it did was the existence of the closed shop attitude of mind in the trade unions to which the majority of members of the council belonged. The closed shop attitude, which they had seen from the angle of employees, they were now translating into action as employers.

Too little had been said about the principle of individual liberty. The B.M.A. was a voluntary body and was now resisting an effort to make people join by such authorities as the Durham County Council. It was fundamentally wrong as a matter of principle that any man should be compelled to join any organization of any kind. If there was one thing that kept an organization on its toes it was the right of its members to resign. Any good trade union, association, or club wanted the right to expel the unsuitable and unwanted member. Were they going to allow a situation to develop in which a union might expel a member on some personal grounds, and that that action must carry with it the loss of the man's livelihood or, in the case of nationalized industries, the loss of his skill as well?

It was not a bad thing for the stimulation of a representative body to have a lesser union, a lesser body, on its fringe. At least it was not a bad thing to have the prospect of that happening. Unless membership of a trade union was kept on a voluntary basis the trade unions themselves would suffer in spirit, in efficiency, and in rights. The Ministers had done all that was possible in an official sense as between Minister and local authority, but the position still remained in Durham, as in half a dozen authorities in this country, that candidates were asked whether or not they belonged to a union. In principle that was exactly the same as sacking existing staff and requiring them as a condition of re-employment to produce evidence of trade union membership.

It was still a matter of public concern and regret that the council was putting that question to intending candidates, as were a number of authorities. How was it that the Government was in so relatively weak a position as to be able only to offer advice until things had gone so badly wrong that they could undertake default or grant powers? This matter was of importance outside the field of local government, for the example would be followed in other fields. If there was one thing which had revolted and humiliated the conscience of the people of this country in recent years it was the spectacle of men being hounded from their jobs because they declined to belong to a trade union. He suggested that the Government were not to be applauded but to be condemned.

The motion was lost by 283 to 298.

Eggs at Mill Hill

Mr. REEVES asked the Minister of Health on March 14 how many eggs were used each week at the W.H.O. Laboratory, Mill Hill, in testing influenza and other viruses and vaccines, how many had been used during the last 12 months, and what was done with eggs after they had been used.

Mr. MARQUAND replied that the laboratory was using about 120 eggs a week, and had used 5,229 in the past 12 months. After use the residue was placed in strong disinfectant and treated as refuse.

Cost of Health Service

Mr. J. LANGFORD-HOLT asked the Minister of Health on March 15 what schemes he had under consideration to reduce the cost of the Health Service.

Mr. MARQUAND replied that he had this matter under constant review, but had no particular statement to make at present.

Mr. LANGFORD-HOLT asked why the Government had not proceeded with the prescription charge.

Mr. MARQUAND replied that many changes had been made, such as reduction in dentists' and opticians' fees and the

cessation of payment of travelling expenses to patients. That kind of thing was always under review.

Replying to Mr. KEELING, Mr. MARQUAND said that he would not impose a charge on visitors to the Festival of Britain for their use of the Health Service.

Hearing-aids

Mr. PRICE asked the Minister of Health on March 15 whether he was satisfied that housewives had the proper degree of priority for hearing-aids; and, if there were others with greater priority, how long they were expected to wait.

Mr. MARQUAND said that, so far as the question of waiting was concerned, he was reviewing the allocation to see that it was fair.

Mr. PROFUMO asked whether, in view of the Government's intention to supply bone-conduction hearing-aids under the Health Service when a suitable system was approved, which service would include the free supply of batteries, he would give an assurance that people who had formerly had to buy commercial aids of this type because of the lack of an appliance approved by his department would also be eligible for the supply of batteries under this scheme.

Mr. MARQUAND said no, and added in reply to another question that they had provided a large number of services under the Health Service, and at present there was no intention of extending them.

Aureomycin

Lieutenant-Colonel Sir THOMAS MOORE asked the Minister of Health on March 15 whether he was aware that there was a great shortage of aureomycin in this country, and what steps he was taking to make good the deficiency.

Mr. MARQUAND replied that it was readily available. There had been a delay due to technical trouble at the South Wales factory, but that had now been remedied.

Tuberculosis

In reply to a question by Mr. GEORGE THOMAS, Mr. MARQUAND said on March 15 that the following numbers of beds were available in tuberculosis sanatoria in Wales in the years shown: 1939, 1,828; 1944, 1,998; 1950, 2,515. Included in these figures were 116 in 1944 and 266 in 1950 vacant owing to shortage of staff.

In reply to another question on nurses in tuberculosis sanatoria in Wales he replied that in 1944 there were 441 whole-time, and at the end of 1950 there were 540 whole-time and 207 part-time.

Staff Establishments

Mr. G. COOPER asked the Minister of Health on March 15 what steps he was taking to ensure that he had the services of suitably qualified advisers to check staff establishments at all levels of the Health Service in order to reduce some of the present excessive staffing, especially of administrative and other non-medical grades, including officials in his department.

Mr. MARQUAND replied that he satisfied himself that his advisers had appropriate qualifications.

Cortisone

Wing-Commander BULLUS asked the Minister of Health on March 15 whether he was satisfied with the recorded success in the use of cortisone, and if he would now sponsor its more widespread use in this country.

Mr. MARQUAND replied that the use of this scarce drug was still under investigation. He hoped shortly to provide a little more for use in hospitals. The Medical Research Council advised that uncontrolled use at present was not desirable in view of the risk of untoward effects.

Day Nurseries

Mr. J. N. BROWNE asked the Minister of Health on March 15 whether, in view of the increasing demand by women to work in industry, he would make a statement on the Government's policy in regard to the provision of staff for day nurseries.

Mr. MARQUAND said it was open to the local health authorities to employ whatever staff might be necessary. At present there was little evidence of a demand for the provision of increased nursery facilities on account of industrial requirements.

The Workmen's Compensation (Supplementation) Bill passed through Committee in the House of Commons on March 5 and was read a third time.

Medico-Legal

DERMATITIS AND WORKMEN'S COMPENSATION

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

The House of Lords recently considered[1] the question whether a workman who suffered from dermatitis both before and after July 5, 1948, when the National Insurance (Industrial Injuries) Act of 1946 came into force, was entitled as from that date to workmen's compensation in addition to "injury benefit" under the Act.

The workman was employed as a leather worker in a tannery, and was certified on November 27, 1947, to be suffering from dermatitis produced by dust or liquids. His employers paid him compensation while he was totally incapacitated, and on December 12, 1947, he was able to return to his former work. He remained in full work until August 14, 1948, when he was again totally incapacitated by a recurrence of the disease. On December 8, 1948, he returned to work, but had to work in a capacity which did not involve contact with fluids, and he consequently earned less than in his old job. He was totally incapacitated again between December 30, 1948, and March 10, 1949, but was able after that to continue with his "dry" job at the reduced rate of pay.

He received "injury benefit" under the 1946 Act for incapacity for 156 days after July 5, 1948, and the medical evidence accepted by the arbitrator was that the attacks of dermatitis in August and December, 1948, were recurrences of the original attack in November, 1947.

The arbitrator awarded in the workman's favour, but the Court of Appeal held[2] that for the purposes of Section 89 of the National Insurance (Industrial Injuries) Act, 1946, the "right to compensation" arose after July 5, 1948, and therefore he was entitled only to injury benefit. The workman thereupon appealed to the House of Lords.

The House dismissed the appeal. Lord Simonds observed that no difficulty arose in the case of an ordinary accident. If a groom kicked by his employer's horse before July 5, 1948, suffered no disability at the time, but after that date developed an injury as a result and became incapacitated, his "right to compensation" under the Workmen's Compensation Acts, though arising after July 5, 1948, arose in respect of employment before that date and was accordingly preserved by the proviso to Section 89 of the Act of 1946.

The difficulty was caused by the "notional accident" of the onset of disease, which was excepted from the operation of the proviso. In his opinion the workman was in this case insured against the disease when the "right to compensation" arose, because the disease "developed" within the meaning of Section 55 (1) of the 1946 Act when the dermatitis broke out again in August, 1948, after a period of inactivity. In that section the word "develop" was as apt to cover a recrudescence of disease after inactivity as an original outbreak.

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[1] *The Times*, March 2.
[2] 1950 1 K.B. 493.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles for the week ending March 3 (No. 9).

Figures of notified *cases* are for: (*a*) England and Wales (London included). (*b*) London (administrative county). (*c*) Scotland. (*d*) Northern Ireland (*e*) Eire. Figures of *births and deaths* and of *deaths* recorded under each disease are for: (*a*) The 126 great towns in England and Wales (London included). (*b*) London (administrative county). (*c*) The 16 principal towns in Scotland. (*d*) The 10 principal towns in Northern Ireland. (*e*) The 13 principal towns in Eire. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, Northern Ireland, and Eire, the Ministry of Health and Local Government of Northern Ireland, and the Department of Health of Eire.

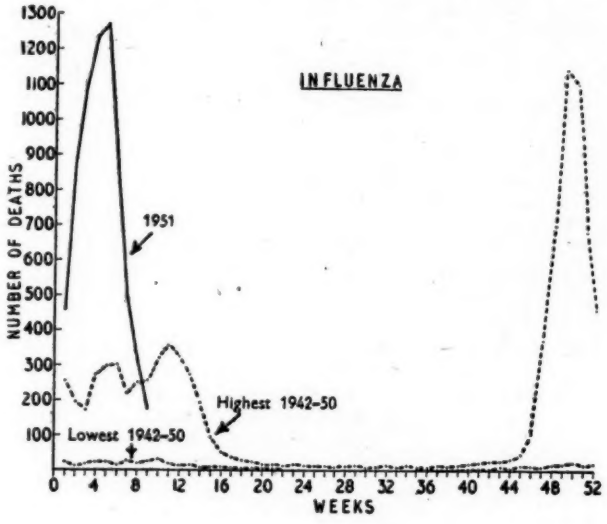
Disease	1951 Week Ending March 3					1950 Corresponding Week					1942–50 England & Wales Corresponding Week		
	(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	Highest	Median	Lowest
Diphtheria	44	3	12	1	1	70	16	22	6	—	866	470	70
Deaths	—	—	—	—	—	2	1	—	—	—			
Dysentery	1,364	133	222	13		280	15	68	2	2	399	184	65
Deaths		—		—					—				
Encephalitis, acute	8	1	2	—		4	—	—	—	—	8	2	—
Deaths		—			—		—						
Erysipelas			17	2	9			32	3	8			
Food-poisoning	87	10		—		27	10		—				
Infective enteritis or diarrhoea under 2 years				21	28					10			
Deaths	13		6	3	1	29		5	1	1			
Measles*	29,154	3,315	358	82	121	4,684	75	146	416	94	22,480	8,788	1,583
Deaths		1	—	—	—			—	—	1			
Meningococcal infection	48	2	18	—	1	42	4	19	3	3	216	70	33
Deaths		—	—				1	1					
Ophthalmia neonatorum	57	6	15	—		34	2	10	—	—	103	67	34
Pneumonia, influenzal	1,252	71	22	26	39	1,000	60	31	19	—	1,500	983	794
Deaths (from influenza)†	178	19	7	2	10	76	17	8	—	2			
Pneumonia, primary			260					230					
Deaths	396	55		8	15	323	63		20	7			
Poliomyelitis, acute:													
Paralytic	19	2	1	—	—	28	2	3	—	7	28	10	4
Non-paralytic	9	2											
Deaths§	3	—			—	1	—			—			
Puerperal fever			4				—	2					
Puerperal pyrexia‖	69	3	4	1		82	5	5	—	—	198	124	82
Scarlet fever	950	53	197	38	54	1,758	100	183	146	72	2,069	1,461	1,167
Deaths		—	—	—	—			—	—	—			
Smallpox	—	—	—	—		—	—	—	—	—			
Deaths				—					—				
(1) Tuberculosis, respiratory			183	39				180	43				
(2) Tuberculosis, non-respiratory			22	3				29	11				
(1) Deaths	204	33	34	5	11	243	25	38	2	24			
(2) Deaths		4	2	4	2		4	2	1	3			
Typhoid fever	4	—	1	1	—	14	7	—	2	2			
Deaths¶	—	—	—	—		—	—	—	—		5	9	21
Paratyphoid fever	2	—	3 (B)	—		7	—	—	—	—			
Whooping-cough	6,096	396	752	26	108	1,614	75	303	44	68	3,067	1,887	1,296
Deaths	6	—	—	1	2	8	—	—	1	—			
Deaths (0–1 year)	288	34	48	12	33	298	36	36	8	19	627	412	298
Deaths (excluding stillbirths)	6,741	1,040	756	150	275	6,080	968	758	174	210	8,352	5,960	4,948
Annual death rate (per 1,000 persons living)			15·3					15·2					
Live births	7,337	1,169	929	224	433	7,589	1,233	972	235	441	10,520	7,436	5,213
Annual rate per 1,000 persons living			18·8					19·5					
Stillbirths	202	26	23			193	26	30			300	215	178
Rate per 1,000 total births (including stillborn)			24					30					

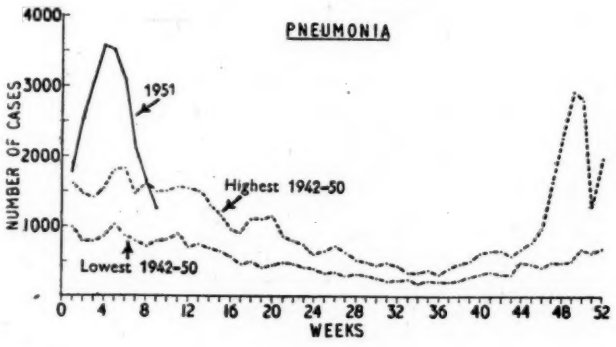
* Measles not notifiable in Scotland and returns are approximate. † Includes primary form for England and Wales, London, and N. Ireland. § The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, and London (administrative county), are combined. ‖ Includes puerperal fever for England and Wales and for Eire. ¶ Deaths from paratyphoid fever are combined with those from typhoid fever.

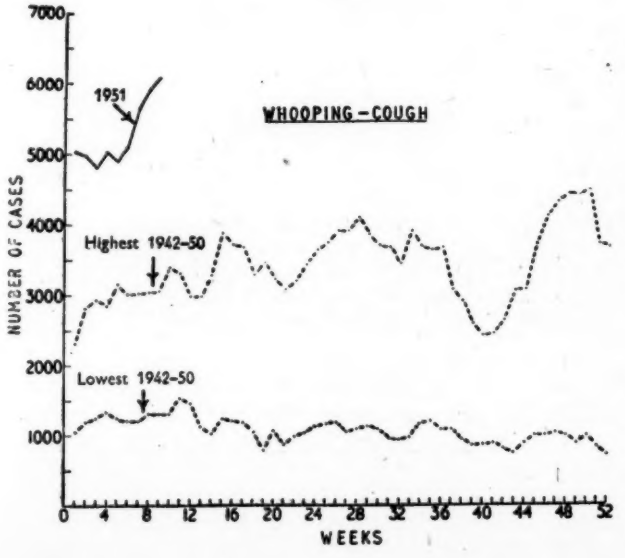
Vital Statistics

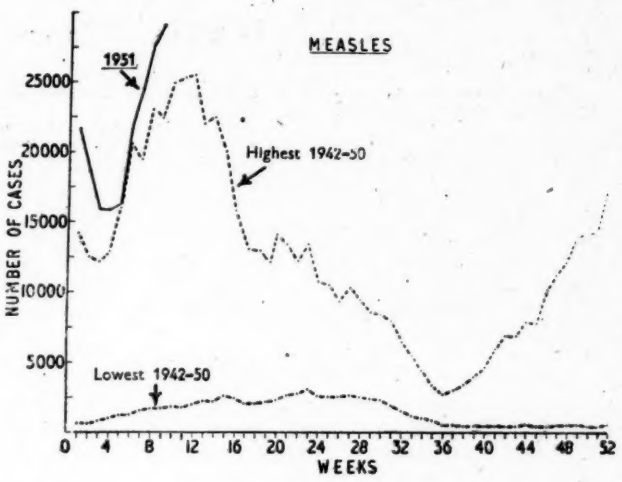
Graphs of Infectious Diseases

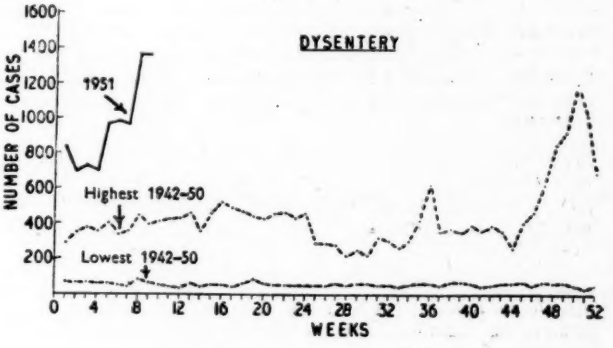
The graphs below show the uncorrected numbers of cases (deaths from influenza) of certain diseases notified weekly in England and Wales. Highest and lowest figures reported during the nine years 1942–50 are shown thus - - - - - -, the figures for 1951 thus ————. Except for the curves showing notifications in 1951, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.

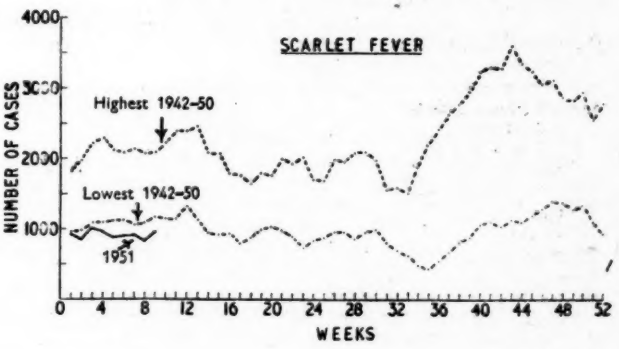












Infectious Diseases

During the week ending March 3 increases in the number of notifications of infectious diseases in England and Wales were reported for measles 1,378, whooping-cough 168, scarlet fever 122, while the notifications of acute pneumonia decreased by 404.

The number of notifications of measles (29,154) was the largest ever recorded. The peak incidence in London and the surrounding counties appears to have been reached. In this area large increases in the number of notifications have been recorded in successive weeks, but in the week reviewed a fall of 431 was reported in London. The incidence in Surrey and Kent remained stationary, but rises occurred in Middlesex 110 and Essex 309. The largest rise during the week was 467 in Yorkshire West Riding.

The notifications of whooping-cough also reached a record high level. During the week the largest rises were Yorkshire West Riding 83, Middlesex 49, and Lancashire 49, while the only large decline in incidence was 97 in Staffordshire.

Only small variations occurred in the local trends of scarlet fever. The chief features of the returns for diphtheria were falls of 4 in London and Staffordshire. Of the 44 cases of diphtheria 6 were notified in Birmingham C.B. For four consecutive weeks a decline in the incidence of

acute pneumonia has been recorded. The largest returns of acute poliomyelitis were London 4, Warwickshire 3, Yorkshire West Riding 3.

The 178 deaths from influenza in the great towns were 139 fewer than in the preceding week.

There were only 2 fewer notifications of dysentery than the record number (1,366) of the preceding week. During the week a new outbreak involving 53 notifications was reported from Berkshire, Abingdon R.D. A further 57 cases were notified from the outbreak in Suffolk, Ipswich C.B., where 44 cases were reported in the previous week. The largest returns of dysentery were Lancashire 182 (Liverpool C.B. 53); Middlesex 169 (Edmonton M.B. 81); and London 133 (Islington 42).

Road Accidents

Road casualties in January totalled 13,517, including 364 killed, 3,214 seriously injured, and 9,939 slightly injured. This total is the highest for any January since the war, and shows an increase of 1,223 compared with that for January, 1950, when 361 persons were killed, 2,985 seriously injured, and 8,948 slightly injured. The increase was among adults. The downward trend of casualties among children (aged under 15) continued; they numbered 1,922, compared with 2,187 in January, 1950. Child deaths were 37, compared with 62.

Universities and Colleges

UNIVERSITY OF BIRMINGHAM

Mr. Frank Barnes, F.R.C.S., has now given permission for his name to be associated with the Postgraduate Surgical Travelling Fellowship founded by him anonymously in 1944.

Dr. R. H. Bolton has been appointed representative of the University at the Royal Sanitary Institute Health Congress to be held at Southport from April 23 to 27.

In Congregation on December 15, 1950, the following medical degrees were conferred:

M.D.—P. H. Davison (with honours), E. A. Barker.

M.B., CH.B.—Aileen W. Bee, J. D. Belt, L. Bowcock, T. M. Dauncey, M. J. Egginton, R. F. Fletcher, Jill Freeborough, R. A. Glover, J. A. Hutchinson, M. Long, K. McAndrew, Margaret R. MacLeod, B. D. Maguire, P. H. Mulhern, Pamela M. Paddock, Margaret M. Roach, E. M. Salt, Margaret J. Segar, M. J. Sill, R. G. Snow, O. A. Soboyejo, A. J. H. Stephens, Mary M. Weeks, H. J. White, S. W. Wilkins.

Ernest Arthur Brown, M.B., B.S., has been appointed Lecturer in Physiology from December 1, 1950; John Legge Stafford, M.B., Ch.B., Lecturer in Pathology in the University, has been seconded to the University College of the West Indies as Lecturer in Pathology for three years from January 1; Benjamin Tillett Davis, M.B., Ch.B., Registrar in Pathology at Dudley Road Hospital, has been appointed temporary Lecturer in Pathology in place of Dr. Stafford.

Samuel Douglas Loxton, F.R.C.S., M.R.C.O.G., has resigned the post of Lecturer in Obstetrics and Gynaecology, from February 17, on appointment as Consultant with the Bristol Teaching Hospital Group and part-time Lecturer in the University of Bristol.

Medical News

Ministerial Appointment in South Africa

Dr. Karl Bremer has succeeded the late Dr. A. J. Stals as Minister of Health and Social Welfare in the Union of South Africa. Dr. Bremer was born on April 27, 1885, and was educated at Wellington, the University of Capetown, and the University of Stellenbosch, where he obtained a science degree and won the Victoria Scholarship, which took him to the University of London for a six years' medical course. He graduated M.B., B.S. of the University of London in 1909.

Harveian Society

On Thursday, March 15, the President of the Harveian Society, Mr. W. E. Tucker, received a number of distinguished guests in the library of the Royal College of Surgeons for a buffet supper which preceded the meeting of the society, when Sir James Learmonth delivered the Harveian Lecture on "The Surgery of the Spleen." All the seats in the lecture room of the College were occupied. At the end of the lecture a vote of thanks was moved by Lord Webb-Johnson and by Sir Horace Evans, who expressed the feelings of the audience in paying the highest tribute to the lecturer and the lecture, which, it is hoped, will be subsequently published in the *Journal*.

Faculty of Anaesthetists Dinner

The third anniversary dinner of the Faculty of Anaesthetists of the Royal College of Surgeons of England was held at the Royal College on March 14. The Dean of the Faculty, Mr. A. D. Marston, presided over a distinguished company. In proposing the health of the Royal College, Mr. Marston said that its President and Council had given the Faculty great encouragement and assistance during the past three years. The College had entered into reciprocity of primary fellowship examinations with other colleges at home and in the Commonwealth, and his Faculty thought this liberal measure most admirable. They hoped it might be extended so that the idea of a common entrance examination in general sciences, which any graduate would take if he aspired to specialist status, could be achieved. In responding to the toast, Sir Cecil Wakeley, President of the Royal College, spoke of the gratitude of surgeons to anaesthetists and of the pride of the College in its Faculties. The progress of surgery during the last decade, as instanced by the advances in cardiac and thoracic surgery, could not have been made without the help of anaesthetists. The toast of "The Guests" was proposed by Dr. Frankis Evans, Vice-dean of the Faculty, and was responded to by Dr. D. W. Logan, Principal of the University of London, and by Sir Gordon Gordon-Taylor. Dr. I. W. Magill proposed the health of the Dean of the Faculty.

Bibliography of A.C.T.H. and Cortisone

The Army Medical Library, Washington, has recently published a bibliography of nearly 3,500 references on *The Pituitary–Adrenocortical Function, A.C.T.H., Cortisone, and Related Compounds.* This is the first of a group of bibliographies which the library hopes to produce. A substantial part of the work is based on the subject cards prepared for the unpublished portion of the *Index-Catalogue*, and the remainder from many other sources. Papers published before 1940 are not included. The bibliography is arranged alphabetically by subject, and there is an author index. It was compiled by members of the staff of the Army Medical Library and is reproduced by photo-offset.

An Aid to Authors and Editors

The *B.M.J. List of Journals and Abbreviations*, which is based on the *World List of Scientific Periodicals*, was recently revised and enlarged. It gives the abbreviations to be used in the lists of references and bibliographies following papers in all the periodicals published by the B.M.A., and in many other journals also. Although it was prepared primarily for the use of the editorial staff of the *British Medical Journal*, a few spare copies are available for sale and may be obtained from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, price 10s. 6d. each, post free.

COMING EVENTS

Conference on Union against V.D.

The Medical Society for the Study of Venereal Diseases has arranged a conference to discuss the formation of a National Union against Venereal Disease, to be held at B.M.A. House, Tavistock Square, London, W.C., on Tuesday, April 17, at 2.30 p.m.

Honyman Gillespie Lectures

A series of Honyman Gillespie Lectures will be given during the summer term in the anatomy theatre, University New Buildings, Teviot Place, Edinburgh, on Thursdays, at 5 p.m., from April 26 to June 14, both dates inclusive. The lectures are open to all graduates and senior students.

Congress of Military Medicine

As announced previously, the Thirteenth International Congress of Military Medicine and Pharmacy will be held in Paris on June 17–23 at the Val-de-Grâce Hospital, 277 bis, rue Saint-Jacques, Paris, 5e. Surgeon-General Jame, Director of the French Army Medical Services, will preside. The Congress will coincide with the centenary celebrations of the French School of Military Medicine. The Congress is open to all medical men who are serving or have served in the medical branch of one of the armed Forces, either as regular officers or as reserve officers. The registration fee is 2,000 francs for each participant and 1,000 francs for each accompanying person. Application forms and further information may be obtained from the secretary-general of the Congress, 8 bis, rue des Récollets, Paris, 10e.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Tuesday

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—March 27, 5 p.m., *"Benign New Growth of the Skin,"* by Dr. H. Gordon.

Wednesday

●ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—March 28, 3.30 p.m., *"The Control of Infectious Diseases,"* by Professor Robert Cruickshank.

Thursday

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool.—March 29, 8 p.m., *"Hirschsprung's Disease,"* by Miss I. Forshall and Mr. P. P. Rickham.

ROYAL ARMY MEDICAL COLLEGE, Millbank, London, S.W.—March 29, 5 p.m., *"Rocket Propellents—Toxic Effects, Hazards, and First Aid,"* by Dr. John Owston.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 29, 5 p.m., *"Brachial Neuritis with Particular Reference to Lesions of the Cervical Intervertebral Disks."* Hunterian Lecture by Professor Arthur Naylor.

Friday

KENT AND CANTERBURY HOSPITAL, Canterbury.—March 30, 5 p.m., clinical meeting.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, London, W.—March 30, 7.15 for 8 p.m., general meeting. Discussion: *"Venereal Disease in the Colonies,"* to be opened by Dr. Wilson Rae and followed by Dr. Robert Lees and Dr. G. L. M. McElligott.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 30, 3.45 p.m., *"Recent Additions to the Museum,"* Erasmus Wilson Demonstration by Mr. L. W. Proger.

Saturday

KENT PAEDIATRIC SOCIETY.—At Farnborough Hospital, Farnborough, Kent, March 31, 11.30 a.m., *Symposium on Anterior Poliomyelitis.* Speakers, Dr. F. O. MacCallum, Dr. Simon Behrman, and Mr. V. M. Franklin. A discussion will follow.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Armstrong.—On March 10, 1951, to Jane (formerly Thurston), wife of Dr. B. P. Armstrong, of 18a, Elsham Road, London, W., a son.

Forbes.—On March 13, 1951, at Canterbury, to Doreen, wife of Dr. G. B. Forbes, a son.

Halle.—On February 20, 1951, at Shearwood Road Nursing Home, Sheffield, to Frances (formerly Saunders), wife of Dr. Hugh Halle, a son.

Lyle.—On March 2, 1951, at the Middlesex Hospital, London, W., to Jane (formerly Maxwell), wife of T. Keith Lyle, C.B.E., M.D., M.Chir., a daughter.

Macrae.—On March 11, 1951, at Hong Kong, to Dr. and Mrs. J. O. Farquhar Macrae, of the Church of Scotland Mission, Ichang, China, a son—Michael Farquhar.

DEATHS

Bowring.—On March 15, 1951, at a nursing-home, Walter Andrew Bowring, F.R.C.S., of The Pines, Furze Hill, Hove, aged 89.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Adrenaline during Anaesthesia

Q.—*What are the risks of giving adrenaline during anaesthesia, especially with chloroform and trichlorethylene?*

A.—There is some risk in giving adrenaline to any patient, and deaths have been reported in these circumstances apart from general anaesthesia. The risk of this untoward happening is considerably increased when chloroform is being administered, and the fatal combination of adrenaline and chloroform was observed a great many years ago. Adrenaline very easily induces ventricular fibrillation in these circumstances. The effects of trichlorethylene on the heart, as shown by E.C.G. tracings, bear many resemblances to those of chloroform, and, although the danger of injecting adrenaline during trichlorethylene anaesthesia is not so clear, such injection is probably better avoided. In any case, and whatever the purpose of the adrenaline injection, the total amount injected at any one time into the patient should be carefully controlled. Thus with any regional analgesic no more than 1 ml. of 1/1,000 adrenaline should be used, mixed with the total volume of local analgesic solution. The dilution of adrenaline need not exceed 1 in 200,000. In no circumstances should adrenaline be injected into a patient who is under chloroform anaesthesia, nor probably into one under trichlorethylene.

Sedatives for Children

Q.—*What are the best routine sedatives for children?*

A.—In the treatment of children there is rarely any need to use sedatives other than:

Chloral: 1 gr. (65 mg.) per year of age, but to be effective rarely in a dose of less than 2 gr. or more than 7 gr. once or twice daily.

Paraldehyde: For severe restlessness, the dose varying according to the route by which it is given.

Phenobarbitone: ¼ to ½ gr. (8–32 mg.) once or twice daily for mild sedation over long periods.

Codeine: 1/32 to ¼ gr. (2–8 mg.) in a linctus or as tab. codein. when the child is restless and in pain.

Aspirin: 2½ to 5 gr. (0.16–0.32 g.) is a useful stand-by for children after early infancy as an occasional sedative.

Anaesthetics and the Foetus

Q.—*In giving anaesthetics in obstetric practice one notices sometimes that a mother may be in the third stage of anaesthesia but the baby is born fully conscious. Is there any explanation of this?*

A.—It is unlikely that a woman deeply anaesthetized would give birth to an entirely unanaesthetized baby. In the circumstances described in the question either the mother was not as deeply anaesthetized as imagined or had been so for only a very short time, or the baby, though crying within a reasonable time, was probably not nearly as lively as a baby born under, say, spinal analgesia. If deep anaesthesia is maintained for more than a few minutes before the birth of the child the likelihood is that the baby will be born anaesthetized. All the anaesthetics

in common use pass the placental barrier, although the effect on the baby may be slightly delayed. For example, some time ago the administration of pentothal alone was described as a method of anaesthesia for caesarean section. The authors found it successful because in their practice the baby was extracted within the twinkling of an eye after the injection of pentothal. Imitators who were a little slower in their operating had disastrous results, and pentothal by itself would nowadays hardly be regarded as a suitable anaesthetic for this operation, because of the frequency with which the baby is born deeply under the influence of the drug.

Dog-bite and Tetanus

Q.—*What are the risks of tetanus occurring after being bitten by a dog? Is it necessary to give antitetanic serum, and, if so, in what dosage?*

A.—The risk of tetanus occurring after any wound depends on the severity of the wound and the degree of sepsis. Wounds that are penetrating or have been allowed to scab over so that anaerobic organisms can grow in them are naturally more liable to be a source of tetanus infection. On the other hand, tetanus has been known to occur after an apparently clean wound, and dog-bites are liable to be infected.

The only almost certain way of preventing tetanus in someone who has not been actively immunized is by giving antitetanic serum at once (3,000 to 5,000 international units according to the severity of the wound). The only disadvantage in doing this is that occasionally reactions follow, and these may be severe.

Telegony

Q.—*A friend recently asserted that a pedigree bitch served by a dog of different breed carried the characteristics of this breed, not only to the litter of puppies resulting, but also to some pups in subsequent litters, even if they were fathered by a dog of the same breed as the mother. Does this happen?*

A.—This supposed phenomenon is known as "telegony," and at one time was widely believed in, particularly by dog-breeders. The classical instance was of the mating by Lord Morton of a maiden seven-eighths Arab mare to a male quagga to produce a hybrid foal which exhibited indistinct striping on the legs and other parts of the body. The mare was subsequently mated to an Arab stallion and produced first a filly and then a colt, both of which were faintly marked with dark stripes. Later investigation showed that faint stripes are not uncommon among Arab horses which are not pure bred, and numbers of similar experiments conducted in various countries with horses and other animals have failed to reveal a single definite instance of telegony.

Because the instance of Lord Morton's was spectacular, it has long been remembered, and the subsequent work showing that the striping of the pure horse foals was pure coincidence has not received the same prominence. Thus many pedigree bitches which have accidentally mated with a dog of another breed have been discarded unnecessarily by their owners.

Acetylcholine and Muscular Contraction

Q.—*I believe that it is now commonly accepted that a motor nerve fibre liberates acetylcholine at the myoneural junction when a nerve impulse arrives there. How does this bring about muscular contraction?*

A.—The assumption is correct. It is now universally accepted that a motor nerve fibre liberates acetylcholine at the myoneural junction on arrival of the nerve impulse. In understanding how this will bring about muscular contraction it must be realized that the acetylcholine so released does not come in contact with an ordinary part of the muscle fibre. At the myoneural junction there is a specialized structure—the motor endplate—which in contrast to the rest of the muscle fibre is specifically sensitive to acetylcholine and becomes depolarized by it. That means that in the presence of acetylcholine the membrane at the motor endplate region is electrically negative to the rest of the muscle fibre. This depolarization can be recorded and is called "the motor endplate potential." A current of depolarization is thus set up by the acetylcholine at the endplate region, and this current in its turn excites the adjacent part of the muscle fibre. This leads to the propagated wave of excitation, "the muscle action potential," which passes along the membrane of the muscle fibre and is the final stimulus for eliciting the contraction of the underlying contractile elements of the fibre. Thus the sequence of events is as follows: arrival of the nerve impulse at the neuromuscular junction—release of acetylcholine from the motor nerve ending—depolarization of the motor endplate by the released acetylcholine—excitation by the current of depolarization, so set up, of the muscle fibre adjacent to the motor endplate—propagation of the excitation wave along the membrane of the muscle fibre—and finally contraction of the underlying contractile elements by this excitation wave. In the meantime the released acetylcholine has become destroyed enzymatically by the true cholinesterase present in the tissue of the nerve ending and of the motor endplate, so that when the excited muscle fibre has come out of its refractory state it will not become excited again by a depolarized endplate unless a new nerve impulse has arrived and released a new minute charge of acetylcholine.

Girls with Moustaches

Q.—*What is the best way of removing a small moustache from an otherwise normal girl of 15?*

A.—At the age of 15, hair on the upper lip is not likely to be stout and therefore suitable for removal by electrolysis or diathermy. There is no objection to plucking the darkest hairs, and this is what is accomplished by the so-called wax method of depilation. After this it may be sufficient to dab the lip with half-strength hydrogen peroxide solution containing one drop of diluted ammonia in half an eggcupful. The softer hair can be removed with a chemical depilatory or rubbed away with a friction stone, but, with either method, treatment should stop short of producing any redness of the lip: erythema is bound to increase the rate of growth of hair, although hypertrichosis of the face in girls is mainly dependent upon endocrine factors.

Iodides and Arteriosclerosis

Q.—*Are iodides indicated in the treatment of arteriosclerosis? Are there any special dangers in their use in this condition?*

A.—There is no indication for the use of iodides in the treatment of arteriosclerosis, nor are there any special dangers attached to their administration.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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